AD-A149 877 DEPLOYMENT AREA SELECTION AND LAND WITHDRAWAL/ACQUISITION CHAPTER 1 M-X/M.. (U) HENNINGSON DURHAM AND RICHARDSON SANTA BARBARA CA 02 OCT 81 1/2

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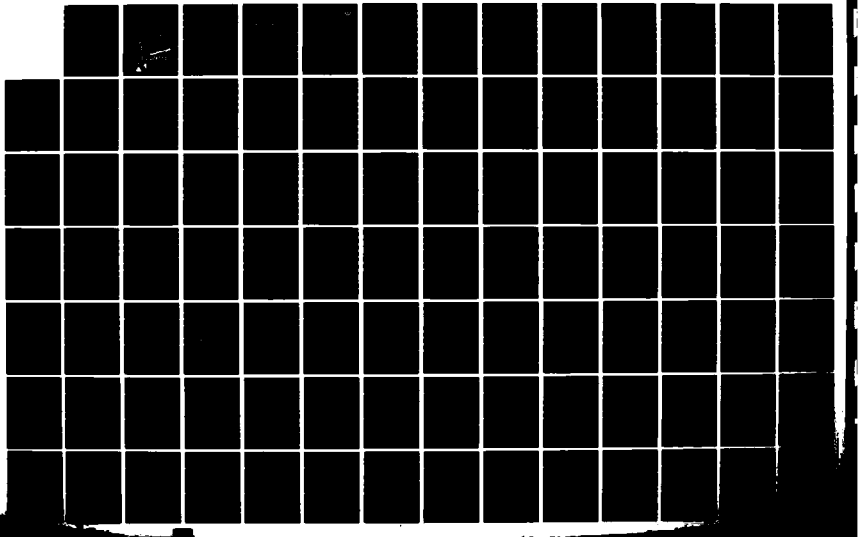

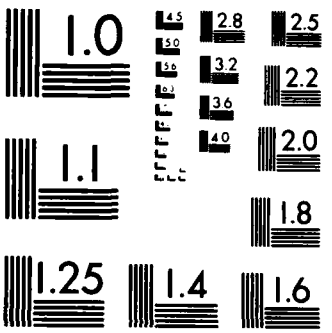

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M-X/MPS

Program Overview

PRELIMINARY FEIS

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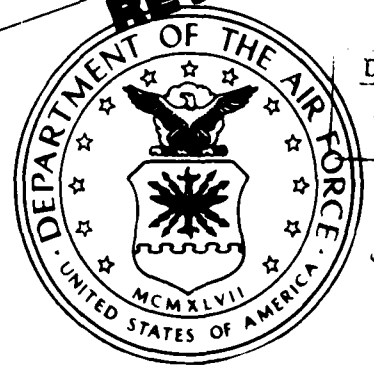

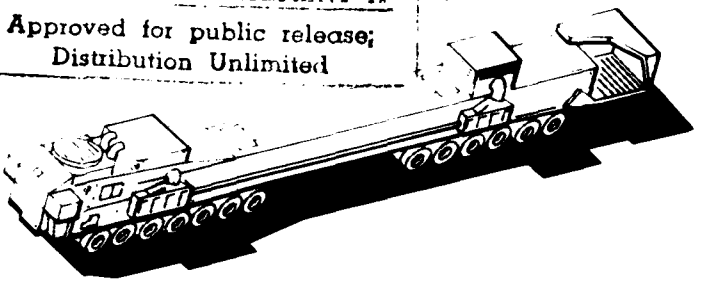

Environmental Impact Analysis Process

DEPLOYMENT AREA SELECTION AND LAND WITHDRAWAL/ ACQUISITION FEIS

DEPARTMENT OF THE AIR FORCE

Note: The Air Force intends to make this "Work in Progress" Preliminary FEIS available to the public through the National Technical Information Service (NTIS). Individual volumes will be obtainable at a nominal charge, either as printed copies or on microfiche. Accession numbers are not available at this work-in-progress stage. For information call or write:

U.S. Department of Commerce
National Technical Information Service
5285 Port Royal Road
Springfield, Virginia 22151
Telephone: (703) 557-4600

Chapter 1

PROGRAM OVERVIEW

Prepared for

United States Air Force
Ballistic Missile Office
Norton Air Force Base, California

Henningson, Durham & Richardson, Inc.
Santa Barbara, California

REVIEW COPY OF WORK IN PROGRESS

2 October 1981

DEPARTMENT OF THE AIR FORCE
WASHINGTON 20330

OFFICE OF THE ASSISTANT SECRETARY

Federal, State and Local Agencies

On October 2, 1981, the President announced his decision to ~~com~~ complete production of the M-X missile, but cancelled the M-X Multiple Protective Shelter (MPS) basing system. The Air Force was, at the time ~~of these decisions~~, working to prepare a Final Environmental Impact Statement (FEIS) for the MPS site selection process. These efforts have been terminated and the Air Force no longer intends to file a FEIS for the MPS system. However, the attached preliminary FEIS captures the environmental data and analysis in the document that was nearing completion when the President decided to deploy the system in a different manner.

The preliminary FEIS and associated technical reports represent an intensive effort at resource planning and development that may be of significant value to state and local agencies involved in future planning efforts in the study area. Therefore, in response to requests for environmental technical data from the Congress, federal agencies and the states involved, we have published limited copies of the document for their use. Other interested parties may obtain copies by contacting:

National Technical Information Service
United States Department of Commerce
5285 Port Royal Road
Springfield, Virginia 22161
Telephone: (703) 487-4650

Sincerely,

JAMES F. BOATRIGHT
Deputy Assistant Secretary
of the Air Force (Installations)

1 Attachment
Preliminary FEIS

DEPARTMENT OF DEFENSE
UNITED STATES AIR FORCE
IN COOPERATION WITH
U.S. DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT
FINAL ENVIRONMENTAL IMPACT STATEMENT
ON
DEPLOYMENT AREA SELECTION AND LAND WITHDRAWAL/ACQUISITION
FOR THE
M-X SYSTEM

The function of the United States strategic military forces is to deter aggression against the United States and its allies. Our air, sea, and land-based weapons form a TRIAD of forces with different capabilities and weaknesses. Together, this TRIAD hedges against the vulnerability or breakdown of any one system and requires substantial Soviet expenditures on defensive rather than offensive weapons.

New and modified multi-warhead Soviet missiles are sufficiently powerful and accurate to destroy a significant number of our land-based intercontinental ballistic missiles (ICBMs) in their silos. Deployment of these missiles is ongoing without an apparent end in the near future. In effect, if a survivable ICBM is not deployed soon, it may not be long before only our air and sea forces are capable of surviving a Soviet first strike. This condition would make the United States increasingly vulnerable, with the strategic forces essentially relying on two (DYAD) rather than three modes (TRIAD). This situation is considered unacceptable by the Department of Defense.

To maintain the TRIAD deterrence, the U.S. Air Force proposes to deploy an ICBM system capable of surviving a surprise attack. This system, the M-X, would consist of 200 missiles concealed among 4,600 protective shelters. The design of this system would provide required survivability of the missiles. The system would include two operating bases, approximately 8,500 mi of operational roads, and related support facilities. It would be operated and maintained by about 13,000-14,000 people. The first 10 missiles would be operational by 1986 and all 200 by 1989. Major decisions to be made at this time are the selection of a deployment area or areas and two operating base locations from areas identified as suitable in Nevada, Utah, Texas, and New Mexico. Land withdrawal/acquisition could begin immediately after selection of the deployment areas(s) and construction of initial facilities could begin in 1982.

This Final Environmental Impact Statement (FEIS) analyzes the effects of deployment of M-X on the alternative deployment areas and the alternative of taking no action.

PREFACE

The law requires preparation of an Environmental Impact Statement (EIS) before decisions are made concerning major federal actions which may significantly affect the quality of the environment. The Air Force's proposed M-X program is such an action. As the environmental input to selection of an M-X deployment area, the Air Force began work in 1979 which has culminated in the publication of this Final EIS. A detailed description of the steps which have been taken (i.e., scoping, draft EIS preparation, public hearings, public comments, and final EIS preparation) is given in Section 1.10 (Environmental Impact Analysis Process).

This Final Environmental Impact Statement (FEIS) complies with the regulations developed by the President's Council on Environmental Quality to implement the requirements of the National Environmental Policy Act (NEPA). There are six chapters in the FEIS, containing environmental analyses of the Proposed Action and alternatives for the deployment area selection. A separate summary provides the reader with a concise synopsis of the M-X program and its potential effects on the environment.*

Chapters 1 and 2 summarize the project and the potential environmental consequences of deploying the M-X missile in a ~~multiple protective~~ structure (MPS) basing mode, as described in the Proposed Action or an alternative, or of not deploying the system (No Action). Those desiring more detail than is given in the summary, should read these two chapters as a minimum.

Chapter 1, the program overview, should be of interest to most readers. It describes the Proposed Action and alternatives and explains the purpose and need for the system as well as the history of the M-X program. It also describes missile and basing components, program schedules, construction, assembly and checkout, operations, safety, decommissioning, the M-X environmental impact analysis process, the land withdrawal and land acquisition process, the "tiering" process for incorporating additional information into the environmental process, the use of public opinion, and an overview of the mitigation program.

The issues which federal and state agencies and the public indicated should be addressed in this EIS were categorized into 35 human and natural environmental resources. Chapter 2 draws from Chapters 3 and 4 to present a comparative analysis of the significant environmental effects on these resources of the Proposed Action and its alternatives, including the alternative of no action. The discussion estimates the effects (both for the short term and the long term) and briefly describes Air Force commitments to mitigate them.

Chapter 3 describes the existing environment of the suitable areas for operating bases and other system elements in the deployment areas, emphasizing those portions of the environment that could be affected by the project.

*Note: A summary would have been required if this document had been filed with the EPA as a final EIS. It would serve no useful purpose as an information resource, and consequently has not been published.

Chapter 4 describes the direct and indirect effects of the Proposed Action and alternatives on the environment, including irreversible or irretrievable commitments of resources, the relationship between short-term uses and long-term productivity, and possible conflicts between the project and local land-use plans.

Chapter 5 includes a list of preparers, a glossary, a list of acronyms, a reference list, and an index.

Section 5.1 of Chapter 5 lists all the Environmental Technical Reports (ETRs) published as appendices to this EIS. The ETRs are technical back-up material supporting the EIS. These reports are made available at locations where interested readers can review them (such as public libraries throughout the study areas) and to state and local agencies whose need for more detail has been expressed (a list of such locations is given in Section 5.6.9 of Chapter 5).*

Nearly 20,000 comments from agencies and individuals have been considered during the preparation of this FEIS. Chapter 6 describes how these comments were handled: the computer processing, categorization, and responses to questions and comments. Other portions of this FEIS also address public comments. For example, Chapter 1 (Sections 1.10.4 and 1.10.5) provides an overview of comments received during the 1 January 1981-1 May 1981 public comment period. Opposing views and representative comments have been included in Chapters 1, 2, and 4 of the FEIS as well as some of the ETRs. The parenthetical reference number following each comment contains the public comment management information system coding which permits automation and retrieval.

Many criticisms were received on the treatment of mitigations in the Draft EIS; this Final EIS responds to those criticisms with an improved organization and a more definitive description of mitigative measures. The reader will find a general overview of mitigations, environmental planning, cooperative community planning, and community impact assistance in Chapter 1 (Section 1.11). Chapter 2 outlines general mitigation strategies and the individual programs of mitigation the Air Force has adopted for each resource. Chapter 4 amplifies the information given in Chapter 2. ETR-38, "Mitigations," is the comprehensive reference for M-X mitigation programs. It contains more information than Chapters 2 or 4 regarding mitigation programs the Air Force would accomplish or advocate; it also lists possible mitigations which the Air Force has not committed itself to implement. In addition to ETR-38, there are ETRs which discuss individual resources and which contain as much, if not more, information as ETR-38 for their particular resource.

There are several aids which may help the reader to use this FEIS more effectively. Chapters 1 and 2 are the best place to start because they are concise summaries. Then, for a specific topic of interest, check the table of contents. From there, the text will usually refer the reader to other sections of the FEIS for more detailed information. The first item in each chapter is a check list of contents for the entire FEIS with the given chapter's contents highlighted. Other useful guides are the index in Chapter 5 and the section titles printed at the top of each page of text.

*EDITOR'S NOTE: The locations cited in Section 5.6.9 were those contemplated at this stage of FEIS development as repositories for the document. They are not necessarily repositories for this "Work in Progress" version.

The six chapters comprising the EIS are as follows:

Editor's note: Not published, see cover letter.

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CHAPTER 1 PROGRAM OVERVIEW

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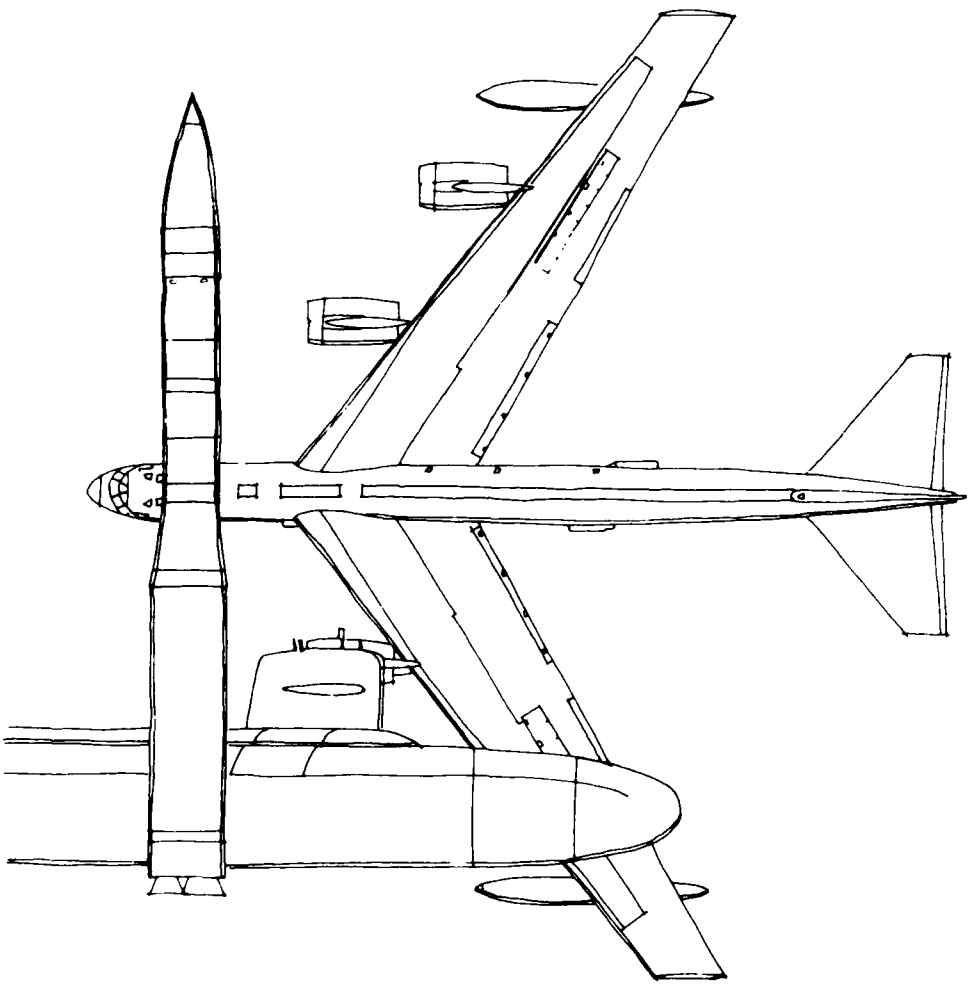
Introduction



1.0 INTRODUCTION

This Environmental Impact Statement (EIS) is the third in a series of environmental evaluations for M-X. The first was an analysis of the buried trench construction and test program (M-X: Buried Trench Construction and Test Program Final EIS). The second addressed full-scale engineering development decisions regarding missile design, basing mode selection, and a flight test program at Vandenberg Air Force Base, California (M-X: Milestone II Final EIS). Subsequent military and operational analyses concluded that there are two bi-state regions from which the final location should be selected: Nevada/Utah and Texas/New Mexico. This third EIS addresses the deployment area selection process and the procedures to be used for land withdrawal/acquisition. A subsequent environmental impact analysis process will address the environmental consequences of M-X production requirements. The production decision is planned for mid-1983. Finally, the "tiering" process will result in multiple environmental analyses as part of final system design.

The M-X system is proposed as a major addition to the United States strategic deterrent capability and is designed to enhance the survivability of the United States land-based strategic missile force. The need for an advanced, survivable intercontinental ballistic missile was established in 1971, and the M-X program began in 1974. The rapidly expanding Soviet threat is making present Minuteman and Titan missile systems increasingly vulnerable and eroding confidence in our ability to deter Soviet aggression. For these reasons, the M-X program is of the highest national priority: the first 10 missiles are to be operational by 1986 and the entire system by late 1989.

The EIS, prepared in compliance with the National Environmental Policy Act (NEPA), is an aid to the selection of a designated deployment area and two operating base locations. Deployment alternatives within the states of Nevada, Utah, Texas, and New Mexico were compared to develop relative environmental considerations which could influence the selection of an area (or areas) for deployment of the system. After the selection of a deployment area, studies will continue on site-specific considerations such as mitigating adverse impacts on human and natural environments.

Congress has participated in the development of M-X by providing valuable guidance regarding engineering refinements and environmental considerations. For example, Congress directed that "split-basing" be explored. This option would deploy half the system in Nevada/Utah and half in Texas/New Mexico, in order to reduce the rapid influx of large numbers of people to a single area. Congress also desires to minimize the amount of land required for the proposed system. The Air Force is working closely with Congress to achieve mutual goals of minimizing adverse environmental impacts, maximizing benefits, and preserving operational capabilities.

The Department of the Interior (DOI) is a cooperating agency because this EIS could be used as part of an application for withdrawing public land for Air Force use. The Bureau of Land Management (BLM) is designated the lead agency for the project within the DOI. Sections 1.6, 1.7, and 1.9 of Chapter 1 summarize the proposed land withdrawal, rights-of-way, and acquisition processes.

This third EIS provides environmental information for a decision on basing area selection and land withdrawal/acquisition for M-X deployment in a Multiple-Protective-Shelter mode (MPS). It does not readdress basing mode selection, which was environmentally evaluated in the Milestone II EIS, approved by former President Carter in September, 1979 and confirmed by Congress in the Cannon Amendment to the DOD Authorization Act for fiscal year 1981. Necessary analyses and decisions concerning M-X deployment which are not covered by this EIS will be addressed as the analyses for tiered decisionmaking (Section 1.10) progress and as M-X project planning continues. The future analyses and decisions to be made in subsequent tiers include:

- Specific site selection of the road system in each affected area.
- Specific site selection of the protective shelters and other facilities.
- Specific site selection of the operating bases.
- Detailed mitigation measures.
- Impacts of commitment of resources to production.
- Requirements for changes in the size of the system or its schedule, if any.
- Decommissioning.

Acquisition of the M-X system has followed a procedure required by the President's Office of Management and Budget (OMB). The OMB procedure is designed to permit the acquisition of new systems in an orderly way to reduce the likelihood of cost overruns. Details of the acquisition process can be found in the DOD 5000 series regulations.

In brief, the acquisition cycle for a weapon system proceeds through five phases, with four formal decision points, known as "milestones." At each decision point, the need for the system and its readiness to proceed to the next phase must

be established or reconfirmed. The decision points control the progressively increasing commitments made to an evolving program.

The program phases and decision points are as follows:

- o Need evaluation, in which the need to provide a new or improved capability is studied in detail.

- o Concept development, in which various system concepts to meet an established need are systematically explored and analyzed. A formal "Milestone 0" review and decision is required before this phase is entered.

- o Validation, in which a selected concept (or concepts) is analyzed in depth and tests are conducted to ensure that the program can proceed without undue technical or cost risk. A formal "Milestone I" review and decision is required before this phase is entered.

- o Full-Scale Engineering Development, in which all components required for system operation are designed, preproduction units are fabricated, and tests are conducted to ensure that the system will perform as required under actual operating conditions. A formal "Milestone II" review and decision is required before this phase is entered.

- o Production and Deployment, in which all necessary elements are procured, and the system is deployed and placed in operation. A formal "Milestone III" review and decision is required before this phase is entered.

An inherent characteristic of the acquisition process is that the engineering design and/or operating concept undergoes continual change. Change is rapid in the conceptual phase as ideas evolve, are studied, evaluated, compete with others for acceptance, and are ultimately recommended for further study or dropped. Changes continue through the validation phase as alternative solutions to problems are examined and compared. The process continues during full-scale engineering development, as the "real" system's final design emerges from the conceptual stage and efforts are made to optimize performance and reliability and minimize costs and environmental impacts. Even after a major system is deployed, changes are not uncommon. Modifications or improvements may be introduced throughout the life of the system. However, the number and magnitude of changes generally diminish as the system proceeds through the acquisition cycle.

M-X has followed the acquisition cycle described and has completed the need evaluation, concept development, and validation phases. The need for a new advanced ICBM (M-X) system was first established by the Strategic Air Command (SAC) of the U.S. Air Force in 1971. Numerous alternatives for providing a solution to the problem of ICBM survivability were studied during the conceptual phase. Three of these were carried into validation: the buried trench, the horizontal shelter, and the water-filled pool. All were Multiple-Protective-Shelter (MPS) systems. During validation, several variants of the buried trench and the horizontal shelter were studied. Other systems evaluated subsequent to validation included vertical shelters in an MPS mode and air-mobile concepts. The continuing effort

has been to define an affordable and environmentally acceptable system that would meet the prescribed operational needs.

The M-X system is now in the Full-Scale Engineering Development (FSED) phase. Of the options considered viable at the Milestone II decision point, former President Carter chose the M-X missile and a horizontal MPS basing mode. Changes are expected as FSED proceeds, just as in earlier phases. The number and magnitude of changes will likely diminish as engineering development proceeds, but change will occur. The design will evolve and be tested at many levels for many operationally important factors. Modifications will be required to correct deficiencies found during actual testing. Ongoing efforts will ensure that program goals are met, costs are minimized, and environmental compatibility enhanced.

In brief, the program has changed, is changing, and will continue to change. The environmental analyses, therefore, have been based on the best available data at a point in time, or on worst-case conditions where appropriate. It is important for the reader to understand that changes can and will occur as the system continues to develop and that the kinds and sizes of these changes are essentially unpredictable. This is the case with M-X, since the effectiveness of the system depends to a large degree on maintaining the design on the leading edge of technology. To the extent possible this FEIS has been designed to accommodate those changes that may occur in the future. Environmental studies will continue through design, construction, and operating phases. This FEIS describes and provides for procedures to be followed should any unanticipated impact be discovered at any phase of deployment, ensuring the integrity of the environmental impact analysis process.

For example, to support construction efforts in remote valleys, a temporary field communication system is needed. Conceptual studies have identified workable, commercially available communication transmission systems. A hybrid satellite dish-microwave tower system suitable for deployment in deep valleys and mountain tops is currently available. The component layout would be defined through detailed design, scheduled to start in the near future. The current plan, however, is to utilize existing commercial and government microwave towers where feasible and economically advantageous. This means many of the new, additional microwave towers may fall outside of the suitability zones. These would be temporary structures, much like temporary utilities, which would be razed after Assembly and Checkout (A&CO) activities are complete.

When the Deployment Area Selection and Land Withdrawal Draft Environmental Impact Statement (DEIS) was published, new estimates had just been developed for construction manpower requirements, but the new estimates were too late to be included into the analysis presented in the DEIS. The Air Force acknowledged this fact and provided, as an erratum to the document, a table comparing the values used in the DEIS with the new (generally higher) estimates. An even more recent estimate has been used in this FEIS. These current construction manpower estimates were developed by a joint Army/Air Force task force (Task Force II) and were based on a 40-hour work week and precast construction techniques. It is important to understand that the construction technique to be used for M-X has not been decided; strategies to minimize manpower and cost are still being considered.

Changes to the basic system, construction technique, construction sequencing and/or architectural variations are expected to be beneficial. Although the number of facility construction workers can not always be reduced for each refinement considered, improved understanding of craft requirements (e.g., number of carpenters, electricians, painters, laborers, etc.) usually results. As studies continue, the Department of Labor, in cooperation with the Air Force and Army Corps of Engineers, will update construction craft personnel requirements contained in this EIS and coordinate updated information with appropriate planning agencies.

Another facet of the manpower issue which should be addressed concerns accommodations for dependents at life support camps. This EIS assumes, as did the draft EIS, that 50 percent of the manpower projected for M-X construction will bring dependents to the deployment area and that all of these families will require accommodations in local communities. These assumptions will result in a prediction of a "worst case" socioeconomic analysis. However, it is recognized that a more stable work force may be achieved and socioeconomic impacts on the local communities may be reduced when life support camps provide accommodations for dependents. A decision to expand bachelor camps (as currently planned) to accommodate dependents has not been made.

The location and size of expanded life support camps is a Tier II decision (see Section 1.10.2 for a more detailed description of tiered decisionmaking). Site-specific proposals are being developed for expanded life support camps and will be coordinated with communities to determine local preferences. When such proposals are developed, the environmental consequences of those proposals will be analyzed. If such impacts are substantially greater than those predicted in this EIS, the FEIS will be supplemented or a new draft statement for these proposals will be circulated, commented upon, and a final impact statement prepared before a final site-specific decision is made on the expanded life support camps.

It is recognized that the specific size of the life support camps and the services they provide (e.g., for health, education, and recreation), will probably vary on a camp-by-camp basis. Planning will consider these factors. This tiered decisionmaking is to be used for specific siting of the operating bases and all of the other M-X facilities.

Another example of program change is the evolution of cluster road patterns. In the present system configuration, each missile/launcher is confined to a "cluster" of 23 protective shelters joined by a road network. In the original cluster concept, the shelters were reached by spurs from an oval main road. The oval road was necessary to accommodate an automated, unmanned "dash" from shelter to shelter. Automated "dash" was considered desirable as a hedge against the loss of location uncertainty (that is, the detection, by an enemy, of which shelter contains the missile). However, the attendant technical risk of automated "dash" was determined to be too high and it was eliminated from consideration. It was subsequently found that both the total length of cluster roads and the area needed to deploy the system could be reduced if the requirement for an oval main road were also eliminated. Although this change occurred shortly prior to publication of the DEIS, it was possible to include it in the analysis. Since the DEIS was written, a road pattern has emerged in which the most direct route is followed between successive shelters. This further reduces the total length of cluster roads and road-associated impacts. There was not enough time, however, to include this change in the analysis so the

actual impacts from cluster roads are likely to be lower than the estimates made in this EIS.

The design of the horizontal protective shelter provides a third example of change in the evolving M-X program. In the original design, (which included oval roads) the protective shelter was large enough to accommodate the complete transporter/launcher vehicle used for automated "dash" and included a reinforced-concrete downramp and approach apron. An alternative was later adopted (as described in the DEIS and this FEIS) in which the transporter and launcher are separable. The shelter, which must now only accommodate the launcher, is consequently substantially smaller in diameter and requires less materials and excavation than the earlier "drive-in" version. The concrete downramp and apron have been replaced by an aggregate surface with dust suppressant applied, further reducing materials requirements.

Another recent engineering refinement has deleted the remote surveillance radars from the system, thus reducing land requirements for both the radar sites and their access roads. The current system design would likely disturb less area than the FEIS estimates.

The power distribution system is being evaluated to determine the least cost, environmentally preferred method of distributing power throughout the deployment area. Refinements to the number, size, or location of power distribution centers may occur after careful consideration of possible improvements.

The impacts related to construction resource requirements are based on a shelter design estimate that is now considered to be conservative. Consequently, current Air Force design planning uses construction resource estimates lower than those used in the FEIS analysis. One notable exception is for steel. This EIS did not analyze the increased steel requirements that resulted from an increase in the thickness of steel liners used for the shelters. The current estimate for steel is nearly double the amount analyzed in this EIS; however the increased steel requirement is not judged to be significant because it is almost negligible compared to the amount of steel expected to be available. The criteria and design of the system are being continually reevaluated with a goal of minimizing both labor and construction resource requirements. Therefore, until final design is completed, construction resource estimates must necessarily contain a degree of uncertainty and be subject to change. Therefore, parts of this EIS may be based upon slightly different numbers. These differences are not considered significant enough to change the conclusions drawn in this EIS. The most current information on construction resources is contained in Environmental Technical Report 31.

Finally, as the operational concept matures, estimates of the number of people necessary to operate and maintain the system will be continually evaluated. Based on the current concept, with its operational and maintenance tasks and schedule, it appears that operational-phase manpower estimates could possibly increase over those used in this FEIS. Potential manpower increases are not reflected in this FEIS, partly because the reevaluation is not yet complete, and partly because a continuing effort will be made to minimize manpower requirements. A supplement to this Final EIS will be issued if environmentally significant increases in operational-phase manpower requirements occur.

To summarize, the Air Force has used the best available information in formulating both the Draft and this Final Environmental Impact Statement. Where changes have occurred that could not reasonably be used in the analysis, these changes have been openly disclosed. Changes will continue and the magnitude of their eventual impact cannot be predicted precisely. However, future refinements are expected to result in relatively small perturbations as the design matures.

Environmental analysis cannot await an "exact" project description based on final design drawings. Final design is normally planned to begin not more than two years before the start of construction. Development of the system concept and criteria for design has advanced sufficiently to provide a reasonably accurate description of the Proposed Action and Alternatives and their environmental impacts to serve as a basis for the deployment area selection decision.

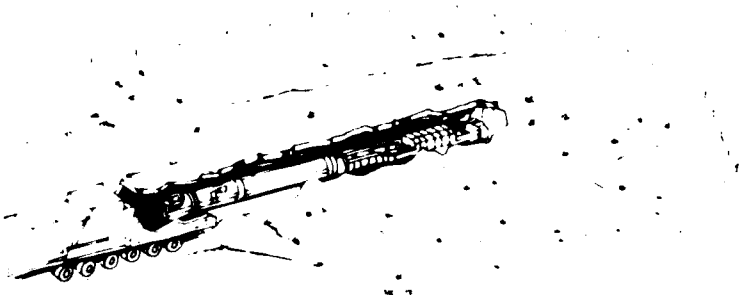
The process of change inherent in the development of a weapon system has not been generally understood by the reviewing public, as exemplified by the following comment:

PUBLIC COMMENT ON THE DRAFT EIS:

> "We are not generally vocal people, but feel that you should be aware that we will not sit by idly and accept everything that the Air Force or the Defense Department desires to do in the name of national defense. With each week and with each new study, the Air Force modifies aspects of the missile system which could significantly alter its effect on us as private citizens. Will they be given this freedom to change, delete, or add, if the go-ahead is given them? The Air Force seems to be pushing this project at all costs." (B0503-1-008)

The "freedom to change, delete, or add" is necessary, as described in the preceding section. This section was expanded over the corresponding one in the draft to explain the reasons that lead to change. The freedom to change is not, however, unlimited: gross changes would require both congressional and Presidential approval; lesser changes, if environmentally significant (including their effects on private citizens), would require additional environmental analysis. The Air Force is not "pushing this project at all costs," but, in accordance with its mission and the perceived need as described in Section 1.1.1, is pursuing the project vigorously in the public interest.

Purpose, Need, and Description of Proposed Action and Alternatives



1.1 PURPOSE, NEED, AND DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

PURPOSE AND NEED (1.1.1)

The purpose of the M-X missile system is to improve the survivability and capability of our land-based intercontinental ballistic missile (ICBM) force, thus continuing to help deter a nuclear attack against the United States.

The need for M-X results from Soviet missile developments which make our Minuteman and Titan land-based ICBMs increasingly vulnerable. These Soviet developments are improved missile accuracy and replacements of single-warhead missiles with missiles carrying multiple warheads. In the near future, Soviet reentry vehicles (carrying warheads) are projected to be accurate enough to destroy any stationary U.S. target near the surface. Additionally, the Soviets will eventually have enough reentry vehicles to send two against each Minuteman and Titan silo while retaining more than 4,000 for use against other targets. If ICBM survivability is not improved, the Soviets would direct their technology and their excess reentry vehicles against our sea-based forces, strategic bombers, and cruise missiles. This would lead to a dangerous gap in deterrence.

It is against this background that the United States must solve the problem of how to best retain an effective, survivable ICBM force without losing the unique features traditionally provided by ICBMs. These features include quick, flexible response; independence from warning; high alert rate; dependable command, control, and communications; and low operating cost.

After 20 years of evaluation, the Air Force has concluded that land-based ICBM force survivability can be achieved by a movable missile deployed in a multiple protective shelter (MPS) system. This concept requires relatively few (200) M-X missiles deployed among a relatively large number (4,600) of shelters. Survivability is obtained by denying the adversary the knowledge of which hardened shelters actually contain missiles and which do not. This concept is referred to as Preservation of Location Uncertainty (PLU). The studies that led to M-X evaluated many missile designs, including liquid- and solid-propellant types carrying single and multiple warheads. The basing modes which were studied included those operated on

or underground, on or underwater, and in the atmosphere. Some concepts considered hardened shelters; others considered unhardened mobile carriers moved over large areas of the country. During these 20 years, the Air Force has studied more than 35 alternate basing modes, which considered railroads, barges, wide-body jets, cargo-type airplanes, submarines, lighter-than-air vehicles, ships, air-cushion vehicles, and trucks. Basing modes included trenches, tunnels, pools, silos, canals, hardened capsules, excavated mountains, and various configurations of shelters. The studies considered manned and unmanned operations as well as various tactical options such as launch on warning, launch during attack, and active defensive systems to intercept and destroy attacking Soviet warheads. Table 1.1.1-1 summarizes 30 major basing alternatives which have been evaluated by the Department of Defense.

Basing modes were rejected because of low effectiveness, low survivability, high cost, high technical risk, or a combination of these factors. On balance, the M-X horizontal MPS system is the Air Force's preferred basing mode. Table 1.1.1-2 compares the basing modes studied.

During the public comment period for the DEIS, considerable interest in the Shallow Underwater Missile System (SUMS) was expressed as an alternative to M-X in multiple protective shelters. Several variants of SUMS have been proposed which would use submarines to carry several missiles, possibly existing Minuteman missiles, near the U.S. coastline. The principal reasons for rejecting SUMS were that it would abandon the TRIAD concept, that it could not be deployed soon enough, and that it presented a high cost risk.

SUMS abandons the TRIAD concept which has served this country well for over two decades. If SUMS were accepted as an alternative to M-X in MPS, then all survivable strategic forces would be either sea or aircraft-based, and enemy efforts could be concentrated on only two types of strategic forces (DYAD) instead of three. A technical breakthrough by the enemy against one of the DYAD forces could be catastrophic and require precipitous action to remedy the situation. Studies by the Department of Defense have found that DYADs are no less expensive than TRIADs for equivalent capability; however, the DYAD would forego military capability, particularly some of the unique and essential characteristics traditionally provided by ICBMs, as previously stated.

Other serious drawbacks of SUMS follow. It is very doubtful that it could achieve initial operational capability as soon as M-X MPS. Submarines of the necessary size do not exist and development, production, and checkout would likely not occur until the 1990s at the earliest. A large number of submarines would be required to provide survivability equivalent to that for M-X. If the Minuteman missile were used, it would have to be modified extensively to adapt it to SUMS. Furthermore, the Minuteman production line or portions of it might have to be reopened to supply missile components. Initial comparative studies have shown that the acquisition costs for SUMS and M-X are approximately equal; however, these studies also reflect a significantly lower confidence in the cost estimate for SUMS.

The M-X system is designed to strengthen our strategic forces so that no nation would initiate an attack against the United States. Should an aggressor attack the M-X missile in a MPS system, he would face an adverse exchange ratio: the attacker would be forced to use more of his weapons than the number of weapons he could expect to destroy. Thus, an enemy, if starting from a position of

Table 1.1.1-1. Summary of basing alternatives (Page 1 of 5).

System Concept	Description	Evaluation	
		Major Positive Features	Major Negative Features
No Rebasing			
Launch Under Attack (LUA)	o Launch Minuteman force when early warning systems assess attack in progress	o Low cost o Near term o Public interface[1] o Environmental impact[1] o Cost[1]	o Vulnerable to attacks on warning and C^3 systems o Requires warning o No endurance o Extremely short decision time o Catastrophic false alarm problem
Orbital Based	o New booster in Minuteman silos o On warning, launch weapons into orbit o On command, deorbit to attack or recover	o Low cost	o Vulnerable to attack in orbit o Requires warning o False alarm means loss of capability o Orbital weapons violate space treaty
Water-Based			
Shallow Underwater Missile (SUM)	o Fasten two or more M-X encapsulated missiles to submarines that patrol off U.S. coast	o Minimal public interface	o Same survivability mode as Trident but probably inferior o Advanced technology subsystems o Early 90s for earliest IOC (with new submarines)
Hydra	o Scatter missiles in the ocean on strategic warning, from ships or submarines o Water-proof missiles float unattended until commanded to launch, or recovered		o Localization/destruction of missiles by trailing ships or airplanes o Strategic warning required o Capture of unmanned missiles o False alarms, recovery, operating environment problems
Orca	o Anchor encapsulated missiles to offshore sea bed	o Long endurance o Minimal public interface	o Cannot check status without revealing location o Violates seabed treaties
Ship-Inland	o Carry canisterized missiles on barges that move continuously along inland and coastal waterways		o Available waterway length insufficient to withstand expanded attack o Interference with commercial traffic
Ship-Ocean	o Carry missiles on special vessels moving randomly on oceans	o Minimal public interface	o Trailing ships or aircraft can localize and destroy o Accuracy insufficient for hard targets

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Table I.I.I-1. Summary of basing alternatives (Page 2 of 5).

System Concept	Description	Evaluation: Major Positive Features	Evaluation: Major Negative Features
Aircraft-Based			
Sea Sitter	o Large amphibian aircraft carries ICBMs o Plane flies over ocean, landing randomly for extended periods of time	o Minimal public interface	o Trailing of airplanes, followed by attack while sitting o Low endurance o Weather problems, particularly with high seas o High cost o Accuracy poor
Wide Body Jet (WBJ)	o Launch missiles from C-5 or 747 class aircraft o Aircraft operate on ground alert like bombers o Option for continuous airborne operations		o Requires warning o Endurance limited to hours o High cost, particularly for airborne alert
Short Takeoff and Landing (STOL)	o Launch missiles from STOL type aircraft o Can access numerous landing sites with STOL capability o Aircraft operates on ground alert like bombers		o Requires warning o Attack on secondary dispersal sites limits endurance o High cost, particularly for airborne alert
Vertical Takeoff and Landing (VTOL)	o Launch small missile (single R/V) from VTOL aircraft o Aircraft operate on ground alert from numerous sites and have a "land anywhere" capability		o Requires warning o Very high cost o 90s for earliest IOC o Violates Interim SALT II
Dirigible	o Carry ICBMs on fleet of dirigibles operating in a continuous airborne mode over oceans o Launch missile from dirigible		o Easy to track and attack o Nuclear safety precludes operations over CONUS o Weather limits operations
Land-Based, Proliferation			
Midgetman	o Build several thousand small, hardened silos and fill each with a small ICBM	o Maintains essential features of ICBMs o Long endurance	o Excessively costly o Violates Interim SALT II

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Table 1.1.1-1. Summary of basing alternatives (Page 3 of 5).

System Concept	Description	Evaluation	
		Major Positive Features	Major Negative Features
Land-Based, Superhard			
Hard Rock Silo	o Build silos in granite outcroppings in western United States o Design goal is to achieve highest possible hardness with surface-flush silo launchers	o Distinct survivability mode o Long endurance	o Defeated by evolutionary accuracy improvements
Hard Tunnel	o Store missiles in very deep, superhard tunnels which can withstand direct hits o Automatic digout and launch on command	o Distinct survivability mode o Long endurance o Minimal public interface o Good security	o Slow reaction after attack o Technical risk of self-contained digout machines o Hardness verification difficult
South Side Basing	o Base missiles in horizontal shelters or vertical silos at the foot of south-facing mesa or mountain cliff o Mountain/mesa shields missile from Soviet ICBM attack arriving from north	o Distinct survivability mode o Long endurance o Low cost	o Vulnerable to responsive threats (low R/Vs, SLBMs, MaRVs) o Limited suitable deployment area o Sites predominantly in national parks
Sandy Silo	o Bury encapsulated missile in ~2000 foot deep hole and cover with sand o Designed to survive direct hit o On command, pressurized water fluidizes sand and capsule floats to surface for launch	o Distinct survivability mode o Long endurance o Minimal public interface o Excellent security o Low cost	o Missile difficult to retrieve for maintenance o Feasibility of egress after a nuclear attack (untestable)
Land-Based, Unsheltered			
Commercial Rail	o Special trains move ICBMs over existing commercial railroads	o Independent survivability mode	o Enemy might trail trains o Public interface problems of nuclear weapons on commercial railroads o Poor security
Dedicated Rail	o Build new automated railway for nuclear hardened trains carrying missiles o Trains move randomly and launch on command	o Independent survivability mode o Long endurance possible	o Trains could be trailed by remote sensors o Large public exclusion area (~90,000 square miles) o High cost
Off-Road Mobile	o Scatter fleet of off-road mobile transporter/launchers over large uninhabited areas of southwest United States	o Indepndent survivability mode o Long endurance possible	o Track and attack transporter locations o Large public exclusion area o Severe defacing of terrain

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Table 1.1.1-1. Summary of basing alternatives (Page 4 of 5).

System Concept	Description	Evaluation	
		Major Positive Features	Major Negative Features
Land-Based, Unsheltered (cont'd)			
Ground Effect Machine (GEM)	o Scatter fleet of GEM transporter/launchers large uninhabited areas of southwest U.S.	o Long endurance possible	o Track and attack transporter locations o Requires warning o Operational feasibility (gullies and other obstacles) o Severe dust erosion
Road Mobile (Minuteman)	o Use existing Minuteman on road mobile transporter/launchers o Base at existing Minuteman bases	o Long endurance possible o Low cost o Near term capability	o Track and attack transporter locations o Takes too long to move vehicles on warning (hours) o Requires warning o Questionable feasibility due to jammed roads
Road Mobile (New Missile)	o Parked on military bases, new ICBMs on transporter/launchers wait for attack warning o On command, transporter convoys move out over interstate highways and secondary roads	o Long endurance possible	o Track and attack transporter locations o Low survivability without hours of warning time o Requires warning o Questionable feasibility due to jammed roads
Land-Based, Trench			
Covered Trench	o Unmanned transporter/launcher travels randomly in a trench that is covered with a concealing fabric	o Independent survivability mode o Long endurance o Automated operation	o Removal of cover plus vehicle immobilization by light precursor attack o Implanted sensors could localize missiles (decoys not feasible) o Large public exclusion area
Hybrid Trench	o Shallow buried tunnels with M-X missile on unmanned transporter o Transporter randomly moves to locations in tunnel that have been selectively hardened	o Independent survivability mode o Excellent security o Automated operation	o Implanted sensors could localize missiles (decoys not feasible) o Large public exclusion area
Land-Based, Multiple Protective Shelters (MPS)			
Dash to Shelter	o Missiles on transporters at center of radial road or rail network o Dash to hardened horizontal shelters on warning	o Long endurance	o Observation of transporter during transit o Requires warning o High speed movement of heavy transporter
Mobile Front End	o Build thousands of silos with a missile booster in each o Randomly mate a lesser number of expensive front ends (reentry vehicles, guidance system) to missiles o Conceal location of complete missile	o Independent survivability mode o Long endurance	o Cost much higher than comparable M-X/MPS o Probably inconsistent with Interim SALT II

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Table 1.1.1-1. Summary of basing alternatives (Page 5 of 5).

System Concept	Description	Evaluation	
		Major Positive Features	Major Negative Features
Land-Based, Multiple Protective Shelters (MPS) (cont'd)			
Pool	o Shelters are pools of opaque water o Transporter deposits water-tight encapsulated missile in pools o Operational concept similar to M-X/MPS	o Independent survivability mode	o Large water usage
Minuteman/MPS	o Construct additional vertical silos in existing Minuteman silo fields o Use Minuteman or new missile that is randomly shuffled between silos	o Independent survivability mode o Long endurance	
M-X/MPS	o 200 missiles concealed among 4,600 hardened horizontal shelters o Decoys simulate missile/launchers in "empty" shelters	o Independent survivability mode o Long endurance	

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[1]No change from present operations.

Source: ICBM Basing Options, a Summary of Major Studies to Define a Survivable Basing Concept for ICBMs. Document prepared for the Office of the Deputy Under Secretary of Defense for Research and Engineering (Strategic and Space Systems), December 1980.

Table 1.1.1-2. Concept evaluation summary (Page 1 of 2).

	Survivability				Operational Feasibility		Technical Risk	Cost	Schedule	Arms Control
	Responsive Threats	TRIAD Independence	Endurance	Public Interface	Security	Operability				
Launch Under Attack (LUA)	n	n	n	s	n	n	s	s	s	s
Orbital Based	n	n	n	n	n	n	s	s	s	n
Shallow Underwater Missile (SUM)	n	n	s	s	s	n	n	s	n	s
Hydra	n	n	s	n	n	n	s	s	s	s
Orca	s	s	s	s	n	n	s	s	s	n
Ship - Inland	n	s	s	n	n	s	s	n	s	s
Ship - Ocean	n	s	s	s	s	n	s	s	s	s
Sea Sitter	n	s	n	s	s	n	n	n	n	s
Wide Body Jet (WBJ)	n	n	n	s	s	n	s	n	s	s
Short Takeoff and Landing (STOL)	n	n	n	n	s	n	s	n	s	s
Vertical Takeoff and Landing (VTOL)	s	n	s	s	s	n	n	n	n	n
Dirigible	n	s	s	n	s	n	s	s	s	s
Midgetman	s	s	s	s	s	s	s	n	s	n
Hard Rock Silo	n	s	s	s	s	s	s	s	s	s
Hard Tunnel	n	s	s	s	s	n	n	n	n	s
South Side Basing	n	s	s	s	s	n	s	s	s	s
Sandy Silo	n	s	s	s	s	n	n	s	s	s

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n - negative feature
n major negative feature
s satisfactory
s major positive feature

Table 1.1.1-2. Concept evaluation summary (Page 2 of 2).

	Survivability				Operational Feasibility		Technical Risk	Cost	Schedule	Arms Control
	Responsive Threats	TRIAD Independence	Endurance	Public Interface	Security	Operability				
Commercial Rail	n	s	s	n	n	s	s	s	s	s
Dedicated Rail	n	s	s	s	s	s	n	n	s	s
Off-Road Mobile	n	s	s	s	s	n	n	s	s	s
Ground Effect Machine (GEM)	n	n	s	s	s	n	s	n	n	s
Road Mobile (Minuteman)	n	n	s	s	s	n	s	s	s	s
Road Mobile (New Missile)	n	n	s	s	s	n	s	s	s	s
Covered Trench	n	s	s	s	s	s	s	n	s	s
Hybrid Trench	n	s	s	s	s	s	n	n	s	s
Dash to Shelter	n	n	s	s	s	n	n	n	s	s
Mobile Front End	s	s	s	s	s	n	n	n	s	n
Pool	s	s	s	s	s	n	s	s	s	s
Minuteman/MPS	s	s	s	n	s	n	s	s	s	s
M-X/MPS	s	s	s	s	s	s	s	s	s	s

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n = negative feature
n = major negative feature
s = satisfactory
s = major positive feature

Source: ICBM Basing Options, a Summary of Major Studies to Define a Survivable Basing Concept for ICBMs. Document prepared for the Office of the Deputy Under Secretary of Defense for Research and Engineering (Strategic and Space Systems), December 1980.

near parity, would be deterred from attacking preemptively because the relative balance of force would be shifted against him. This is the essence of deterrence and the fundamental reason why M-X is needed.

The Air Force plans to achieve ICBM survivability by deploying missiles in a multiple protective shelter system. This concept is technically feasible, affordable, and provides the required force. Further research and development may provide opportunities to reduce the ultimate scope of the multiple protective shelter system. However, the near-term threat to silo-based ICBMs requires a response. M-X MPS deployment at the earliest possible date is the response favored by the Air Force.

On September 7, 1979, President Carter announced his decision to proceed with full-scale engineering development of the M-X system:

> . . . For nearly 30 years, now, our nation has deterred attack and has kept the peace through a complementary system of land, sea and airborne nuclear forces, commonly known as the strategic TRIAD.
>
> . . . My administration is now embarked on a program to modernize and to improve the ability of our entire strategic TRIAD, all three systems, to survive any attack. Our bomber force is being strengthened with nuclear-tipped cruise missiles. Our strategic submarine force is being upgraded by Trident submarines and Trident missiles.
>
> . . . However, as a result of increasing accuracy of strategic systems, fixed land-based intercontinental ballistic missiles or ICBMs located in silos, such as our Minuteman, are becoming vulnerable to attack. A mobile system will greatly reduce this vulnerability. Therefore, I decided earlier this year to proceed with full-scale development and deployment of a new, large mobile ICBM, known as the M-X. I made this decision to assure our country a strategic deterrent now and in the future.
>
> . . . At the time I made the decision to build the M-X, I established five essential criteria which the basing system would have to meet.
>
> - First, it must contribute to the ability of the strategic forces to survive an attack.
> - Second, it must be verifiable so as to set a standard which can serve as a precedent for the verifiability of mobile ICBM systems on both sides.
> - Third, it must minimize the adverse impact on our own environment.

- Fourth, its deployment must be a reasonable cost to the American taxpayer.

- And fifth, it must be consistent with existing SALT agreements and with our SALT II goal of negotiating for significant reductions in strategic forces.

The President concluded his announcement of the M-X decision with the following statement:

> . . . In sum, this system will enhance our Nation's security, both by strengthening our strategic deterrent and by offering the prospect of more effective arms control. This system is not a bargaining chip. It's a system that America needs and will have for its security. I'm confident that the American people will support its deployment.

The decision to develop M-X is not dependent on ratification of SALT. Various scenarios were considered and it was concluded that M-X MPS was the best solution to the survivability problem, either with or without a SALT agreement. The system has the flexibility to delete SALT monitoring aids without changing the fundamental concept or its effectiveness.

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES (1.1.2)

This environmental impact statement provides information to aid in making two major decisions:

- selection of a designated deployment area or areas, and

- selection of two operating base suitability zones to support the selected deployment area or areas.

It is not intended to readdress the question of alternative deployment modes for M-X.

Two regions have been determined suitable for M-X deployment. These are located in Nevada/Utah and Texas/New Mexico. Seven areas referred to as "suitability zones" for siting operating bases have been identified, from which two will be selected. These potential base sites are near Beryl, Utah; Coyote Spring Valley, Nevada; Delta, Utah; Ely, Nevada; Milford, Utah; Dalhart, Texas; and Clovis, New Mexico. The criteria used to identify these deployment areas and suitability zones are as described in Chapter 2, Section 2.1, and in ETR-1, "Location Alternatives."

The basing options considered in this EIS deploy all 200 missiles in Nevada/Utah, all 200 missiles in Texas/New Mexico, or approximately 100 missiles in each of the two regions. This last option is referred to as "split basing."

If all 200 missiles were deployed in Nevada/Utah, the system would be located within the region indicated in Figure 1.1.2-1. The illustration includes the approximate location of five operating base sites, from which two would be selected. The Proposed Action and Alternatives 1 through 6, which consider deployment in the Nevada/Utah region, differ principally in operating base locations. The Proposed Action considers operating bases in Coyote Spring Valley, Nevada and near Milford, Utah, and is the Air Force's preferred alternative.

If Alternative 7, which considers deployment of 200 missiles in Texas/New Mexico, is selected, the system would be located within the region indicated in Figure 1.1.2-2. The operating bases in this alternative would be in the vicinities of Dalhart, Texas, and Clovis, New Mexico.

If Alternative 8, "split-basing," is selected, 100 missiles would be deployed in Nevada/Utah and 100 in Texas/New Mexico, with operating bases in Coyote Spring Valley, Nevada and near Clovis, New Mexico. (The region where the system would be located is shown in Figure 1.1.2-3.)

More detailed versions of Figures 1.1.2-1 through 1.1.2-3 (presented in Chapter 2) show the potential location of operating bases and area support centers, possible sites for protective shelters, and possible routes for interconnecting roads. This FEIS analyzes the cumulative impacts of the entire M-X system as well as the potential effects of the conceptual deployments of the major components of the system. As the program proceeds, and land is withdrawn or acquired for the system, more detailed studies of specific locations will be conducted. The general regions identified in this EIS and the overall impacts predicted are not expected to change. Specific sites may change from the tentative locations shown in this EIS as more detailed information accumulates. Wherever feasible, project elements will be re-sited to minimize environmental impacts. Additional environmental studies and documentation required following this EIS are described in Section 1.10.2, Tiered Decisionmaking.

The Proposed Action and alternatives selected for environmental analysis are shown in Table 1.1.2-1. Section 2.1 of Chapter 2 describes the process used to determine deployment alternatives; Section 2.2 describes the Proposed Action and alternatives, construction scenarios, and resource requirements for each.

Land will be required within the deployment regions for short-term construction and for long-term operation. The total area to be permanently withdrawn for M-X purposes will be approximately 25 sq nautical mi (33 sq statue mi) for each alternative except for split-basing. For split basing, the total area will be about 28 sq nautical mi (37 sq statute mi). A summary of the land required for permanent facilities and roads and of the area disturbed during construction is provided in Table 1.3.1-5.

In addition to the Proposed Action and Alternatives 1 through 8, there is the additional alternative of no action. If the decision is made to take no action, land uses and the human and natural environments of the candidate deployment areas will still change because of other projects. This FEIS has been structured so that the reader can distinguish between the environment without M-X, the environment with M-X, and the environment with both M-X and other expected projects. The impact of no action is simply the projected change to the environment without M-X and is summarized in Chapter 2.

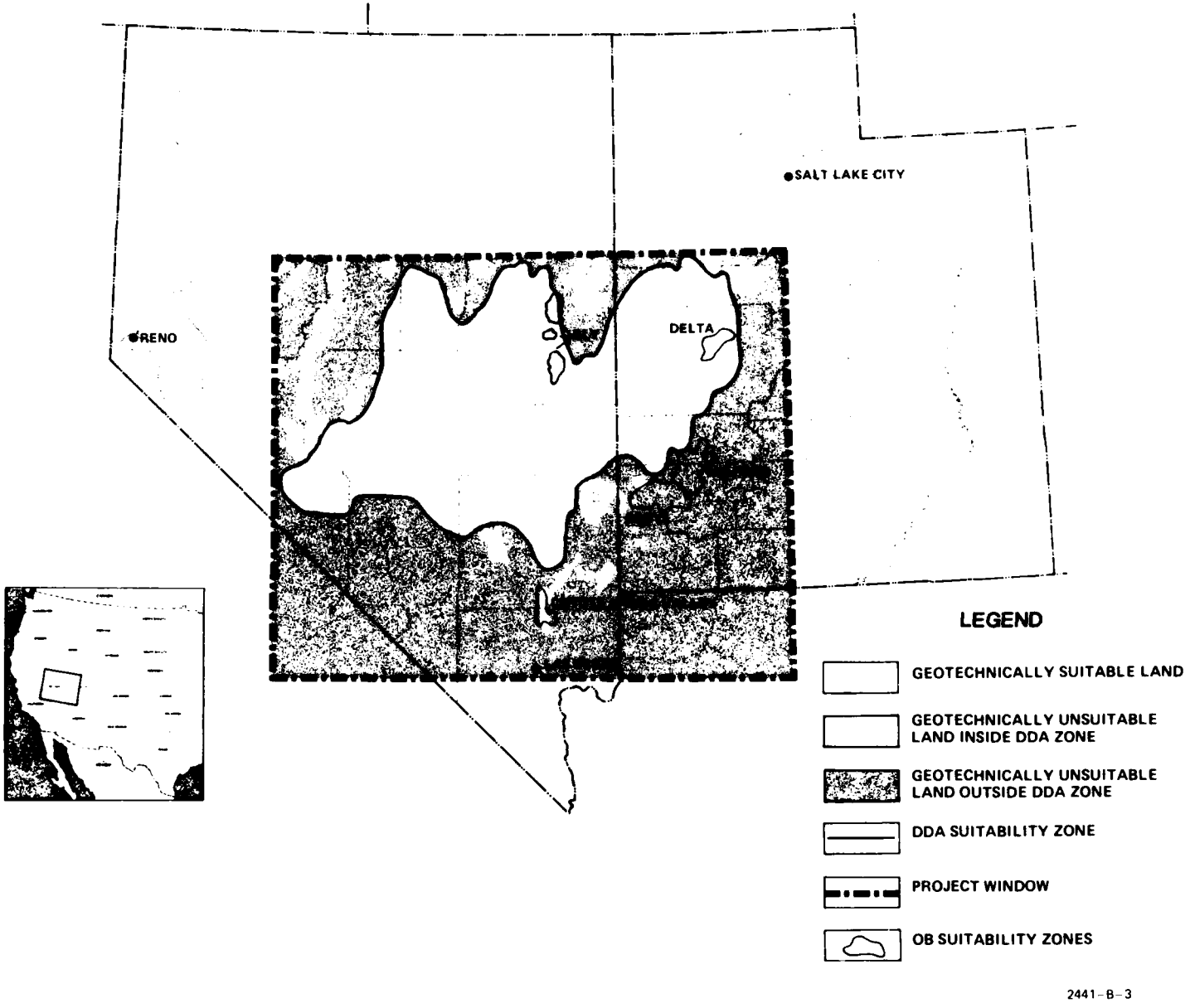

Figure 1.1.2-1. Suitable deployment regions in Nevada/Utah, showing alternative operating base vicinities.

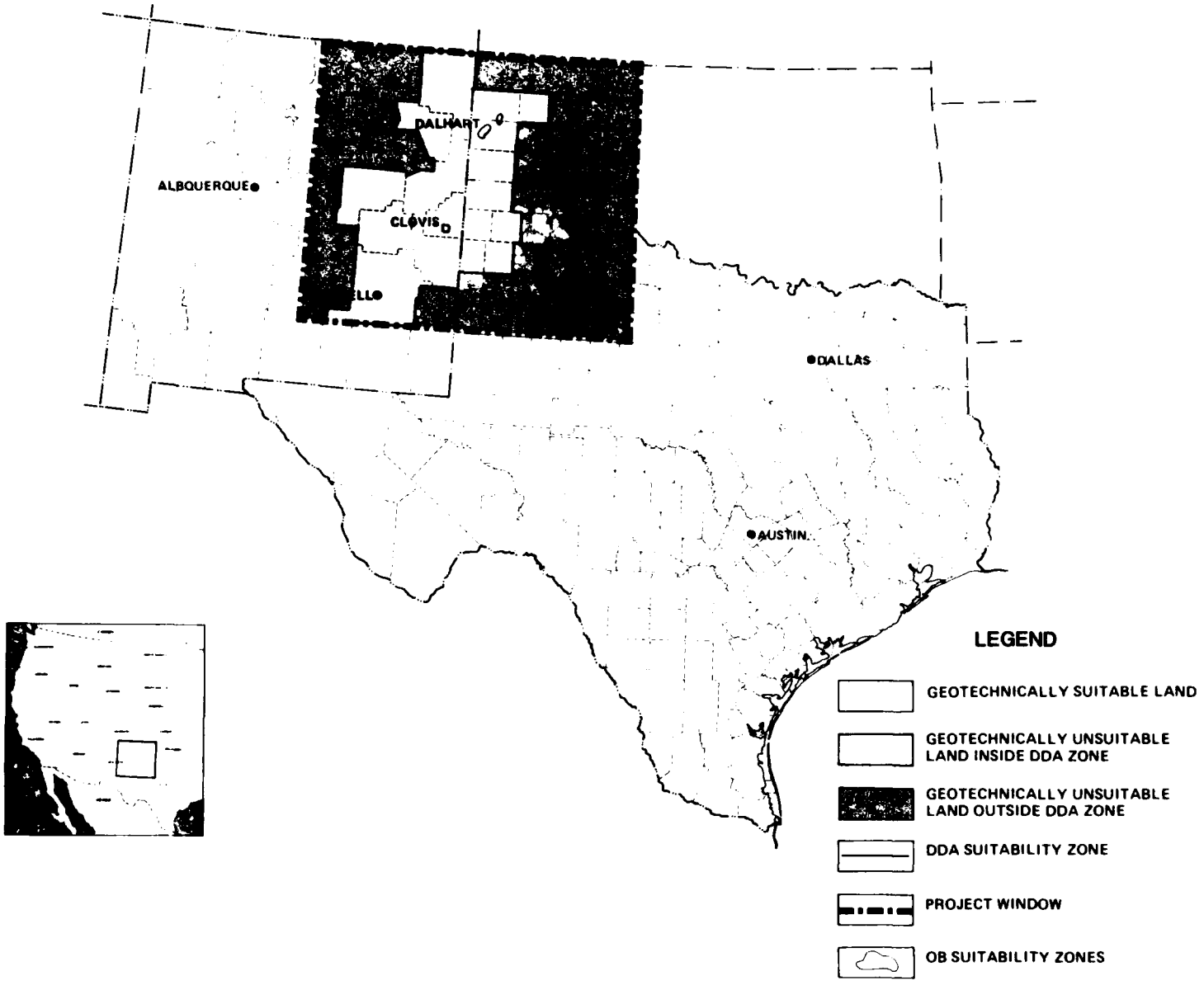

Figure 1.1.2-2. Suitable deployment regions in Texas/New Mexico, showing operating base vicinities.

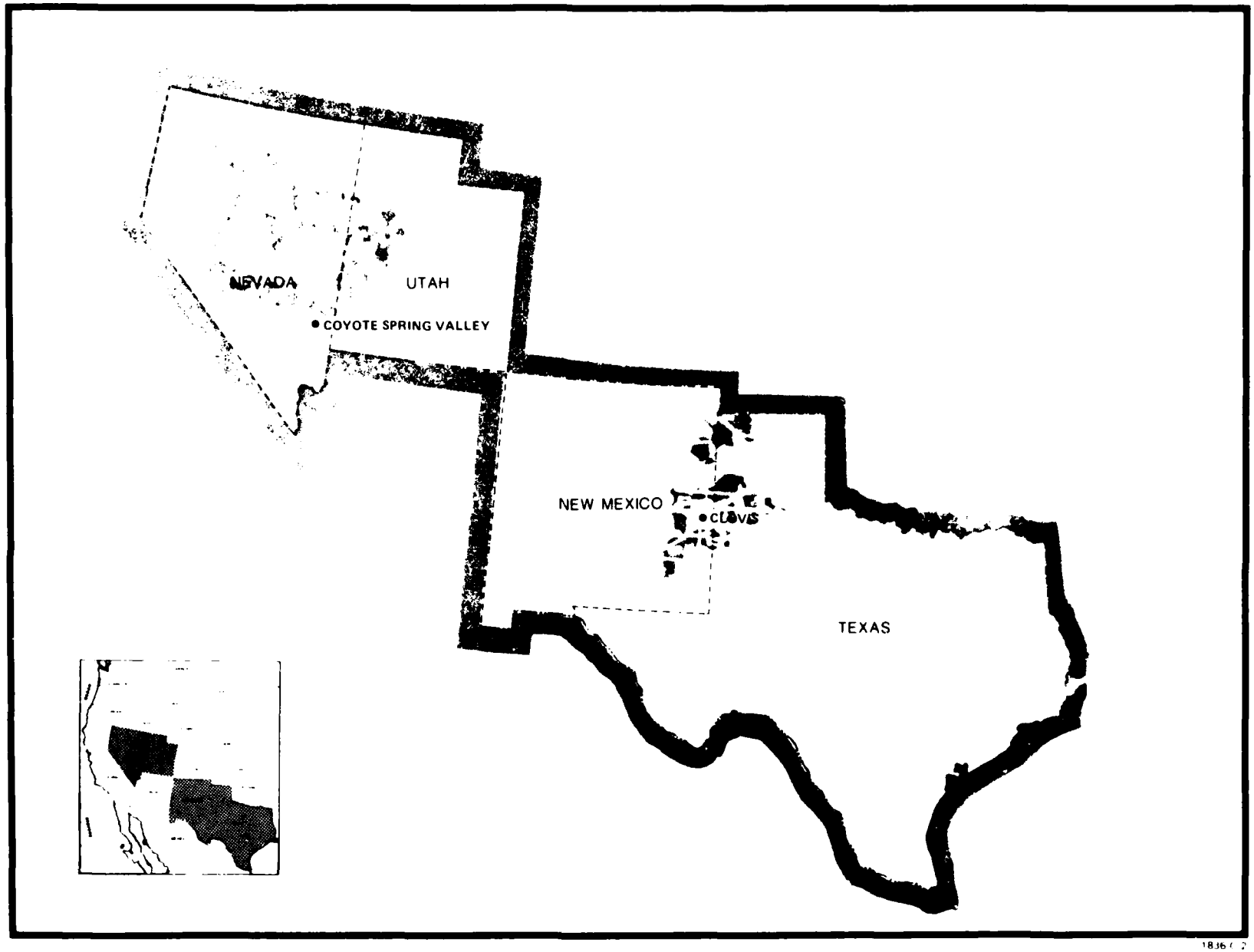

Figure 1.1.2-3. Split basing in Nevada/Utah and Texas/New Mexico showing operating base vicinities.

Table 1.1.2-1. Proposed Action and Alternatives.

Options		Deployment Areas[1]		Operating Base Vicinities	
		Nevada/Utah	Texas/New Mexico	First	Second
Proposed Action					
Nevada/Utah, Full Deployment		200	0	Coyote Spring Valley, Nev.	Milford, Utah
Full Deployment Alternatives					
1.	Nevada/Utah	200	0	Coyote Spring Valley, Nev.	Beryl, Utah
2.	Nevada/Utah	200	0	Coyote Spring Valley, Nev.	Delta, Utah
3.	Nevada/Utah	200	0	Beryl, Utah	Ely, Nev.
4.	Nevada/Utah	200	0	Beryl, Utah	Coyote Spring Valley, Nev.
5.	Nevada/Utah	200	0	Milford, Utah	Ely, Nev.
6.	Nevada/Utah	200	0	Milford, Utah	Coyote Spring Valley, Nev.
7.	Texas/New Mexico	0	200	Clovis, N. Mex.	Dalhart, Tex.
Split Basing Alternative					
8.	Nevada/Utah-Texas/New Mexico	100	100	Coyote Spring Valley, Nev.	Clovis, N. Mex.
No Action Alternative		NA	NA	NA	NA

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[1]The numbers represent missiles deployed (approximate for split basing).

Source: Department of the Air Force, Headquarters Ballistic Missile Office (AFSC), 1981.

AGENCY AND PUBLIC COMMENTS ON THE SYSTEM AND ALTERNATIVES (1.1.3)

During the public review of the DEIS, a substantial number of comments were received addressing the need for the system, advocating military alternatives, and suggesting siting alternatives. (The public review process is described in Sections 1.10.4 and 1.10.5.) Comments from the public and government agencies are addressed in Chapter VI. In addition, comments are interspersed through Chapter I and Chapter IV to provide a sampling of comments on various issues and resources. Because so many and such varied comments were pertinent to Section 1.1., a sampling of these comments has been grouped here in a separate subsection; elsewhere, they are cited within the text.

Many of the issues raised were not, strictly speaking, environmental ones. However, where it was possible to do so, the Air Force responded to the concerns expressed. Notably, this FEIS addresses selection of suitability zones for two operating bases and for a siting area or areas for an ICBM system deployed in a multiple protective shelter (MPS) mode; for the purposes of this EIS, the basing mode decision has been made, and alternative basing is not an issue.

Representative comments on various issues pertinent to Section 1.1 are given below, with Air Force responses where appropriate.

History

Several people have strongly contended that the evolution and history of the M-X program should be discussed thoroughly, as represented by the following public comment:

> PUBLIC COMMENT ON THE DRAFT EIS:
>
> "I do think that a short discussion of other hair-brained or legitimate approaches to the defense issue would be in order for historical reasons and for complete evaluation of the no-action alternative to M-X deployment. I think the reviewing public is owed this type of presentation, and that it might also have the effect of convincing some that we do not have such a simple and limiting technological approach to national and world defense. I think a more thorough discussion of the evolution and history of this project, citing and reproducing significant congressional and executive decisions would place the project in a more comprehensible context." (A0063-7-003)

Section 1.1.1 has been expanded in response to this and similar comments. A somewhat more detailed history of the project was given in the M-X: Milestone II FEIS. A full-scale historical discussion is outside the scope of this EIS. Recommended additional reading for a comprehensive overview is the series of Annual Reports issued by the Department of Defense and the records of numerous hearings held for many years by committees of the Senate and the House of Representatives. In addition to statements by knowledgeable congressmen, both supporting and opposing views on the system also appear in the Congressional Record.

Arms Race

A very significant concern expressed during public hearings and in public comment letters is that the M-X program may not promote peace as intended, but could escalate the arms race and increase the likelihood of war. Representative comments are as follows:

PUBLIC COMMENTS ON THE DRAFT EIS:

"The Romans had a belief, if you desire peace, prepare for war. Well, the Romans are no longer with us. Unfortunately their thinking still is. When has an arms buildup led to peace? The question might produce an interesting history course, except for the fact that unlike a sword or gun, a single nuclear mistake ends the debate. In fact, ends the history of the human race." (B0763-1-002)

"Four of my five children are here today and I am deeply concerned for the next generation who will inherit a legacy of nuclear warheads. If they are lucky. The more weapons we build, the greater the likelihood that these weapons will be used. The survivors of any nuclear war will envy the dead. What we are teaching our children is, not to trust in God, but to trust in weapons. Not to work out our differences with other nations, but to fear them." (B0674-0-002)

"... the Center of Defense Information, which is made up of retired military personnel, they tell us that rather than protecting the country that M-X makes nuclear war more likely as it is an offensive weapons system." (B0340-8-006)

"First of all I would like to say that I don't believe the M-X missile system will effectively prevent a nuclear war but that it will directly escalate the possibility of that war by further straining U.S.-Soviet relations." (B0338-2-001)

"What we are dealing with is a lot more important than whether or not the M-X will forever change thousands of square miles of this state. I believe it will. Or that the costs of this project will surpass anything man has yet conceived. I believe they will. The vital fact is that nuclear proliferation is sheer national suicide for any nation that undertakes it." (B0766-4-002)

"I believe there is a real danger of atomic wa here and that the M-X and its race track system will increase that risk." (B0260-8-003)

"I suggest that the M-X system, because of its extremely poor survivability will actually entice rather than deter an attack. Therefore, the impact will have a disastrous effect on the entire world by encouraging a nuclear holocaust." (B0740-9-001)

"This endless race is nothing less than insane. It is not anything that is going to create safety for us. We already have the firepower to

destroy Russia approximately 40 times over. It is not going to help us to be able to do it fifty times or a hundred times or two hundred times." (B0195-6-003)

The questions here are predominantly whether additional strategic arms are needed or desirable, and whether M-X is the appropriate system. The Air Force has studied this question for many years and has concluded not only that a survivable ICBM is needed to counter Minuteman and Titan vulnerability, but that M-X in a multiple protective shelter basing mode is its preferred alternative. The Air Force's approaches have been repeatedly reviewed by the Department of Defense and by both houses of Congress. Sections of the Fiscal Year 1982 Arms Control Impact Statement on M-X, prepared by the U.S. Arms Control and Disarmament Agency,[1] provide comments regarding the effects M-X might have on the arms race, political stability, and arms control:

"Improvements in U.S. and Soviet ICBM accuracy increase the vulnerability of fixed-launcher ICBM forces of both sides and, in the face of an asymmetrical overall force vulnerability, could conceptually provide an incentive, in an extreme crisis, for one side or the other to strike first. The most immediate source of future instability is the growing threat to our fixed, hard ICBMs due to an increase in Soviet accuracy and number of ICBM RVs.[2] Prudent Soviet leaders would not be certain of obtaining the necessary performance from or coordination in their forces to make such an attack effective. Nor could they be sure that we would not launch our ICBMs on warning or under attack (although we would by no means wish to rely on having to do so). However, less prudent or more desperate Soviet leaders might not be constrained by these considerations. (Deleted).[3]

"Additionally, other components of U.S. and Soviet strategic forces, as well as surviving ICBMs, would continue to ensure a substantial retaliatory capability and thus could provide additional disincentive against a first strike, provided that surviving force asymmetries do not deter retaliation. These considerations ameliorate the destablizing effects of the increasing vulnerability of silo-based ICBMs.

"The increasing vulnerability of the MINUTEMAN force, the necessity to maintain the deterrent contribution of the ICBM leg of the Triad, the political and military implications of an asymmetry in the

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[1] Unclassified versions of all Fiscal Year 1982 Arms Control Impact Statements, including a digest by the Congressional Research Service, were printed for the use of the Committees on Foreign Affairs and Foreign Relations of the House of Representatves and Senate, respectively. For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

[2] "RV" stands for reentry vehicle.

[3] Note: This is a direct quote from the document. Deletions were made to create the unclassified version and were not made by the Air Force.

ICBM capabilities (including prompt, hard-target-kill capabilities) favoring the Soviet Union, and the on-going and projected overall buildup of Soviet strategic forces have led to the decision to build the M-X missile and deploy it in the horizontal, multiple protective structure basing mode. Key questions in this debate concerned the amount of deployed, survivable, prompt capability necessary to meet U.S. targeting requirements, whether that capability should reside in a mix of ICBMs and SLBMs, how soon that capability needed to be acquired, and whether it was essential to address the vulnerability of ICBMs and to avoid apparent asymmetries in U.S. and Soviet ICBM capabilities by means of ground-mobile ICBM deployments. The administration decided to build the M-X and deploy it in the horizontal multiple protective structures basing mode. This decision reflects the judgment, after careful deliberation, that the paramount necessities are to maintain the ICBM leg of the Triad's unique contribution to credible deterrence and to deny the Soviets any political or military advantages that may result from a major asymmetry in relative ICBM capabilities.

"Some Soviet planners could see MINUTEMAN improvements alone as posing an increased threat to Soviet silo-based ICBMs, and conclude that with the M-X deployed in substantial numbers, in addition to MINUTEMAN, the U.S. would have acquired a capability to destroy most of the Soviet silo-based ICBM force in a first strike. Such a prospect, although contrary to U.S. policy, could be of considerable concern to Soviet leaders, since a significantly greater percentage of Soviet strategic weapons (about 75 percent for USSR versus about 25 percent for U.S.) is in its ICBM force, despite the fact that some (deleted) percent of the Soviets' deployed strategic weapons could survive. It could cause them to react in a variety of ways that could strengthen or weaken stability.

"M-X deployment will improve stability by increasing the survivability of U.S. ICBMs, and therefore their deterrent value as second strike forces. Increased survivability would result from the vastly more complicated targeting problem and the unfavorable weapons exchange ratio it would pose to the Soviet Union. Also, the greater capabilities of the M-X would maintain the U.S. ICBM force's retaliatory capabilities, further redressing the perception, and the reality, of increased Soviet advantages in certain force characteristics. Improved hard-target-kill capabilities also could permit the U.S. to attain an effective capability against Soviet military and command/control targets which have been increasingly hardened.

"The increased capabilities of the M-X and its deployment in a ground-mobile basing mode may provide incentives to the Soviet Union to reduce its dependence on ICBMs, or to seek a similar ground-mobile basing mode for part of their own ICBM force. It may also serve as an incentive for the Soviets to increase the number of attacking RVs, in order to offset the effect of U.S. deployments, to retain the capability to potentially threaten the U.S. land-based ICBM force, or to respond to increased U.S. strategic capabilities in general. However, a situation in which both sides had deployed mobile ICBMs could be more stable than

one in which only one side's ICBMs were mobile (or otherwise survivable), and the other's were potentially vulnerable.

"While there may be arms control risks involved with deployment of the M-X, the national political and military risks involved in not doing so are even greater. (Underscore added for emphasis.) The U.S. must avoid the adverse impacts that would result were we to abandon land-based ICBMs. This would allow and encourage the Soviet Union to concentrate its efforts on neutralizing our strategic bomber and submarine forces. The improved counter-silo capabilities associated with U.S. ICBM improvement programs could give the Soviets incentive to move to more stable survivable strategic forces, and could also increase their interest in arms control agreements that limit counter-force capabilities on both sides."

With declining ICBM survivability the United States is being placed in a "launch or lose" position if attacked. Figuratively speaking, that moves our finger closer to the nuclear trigger. In response, the Soviets also move closer to the nuclear trigger. What results is a situation in which both sides are poised to respond to the first provocation so they don't come out second best. This is a very undesirable instability because it could lower the nuclear threshold in periods of international tension. The intent of M-X is to restore essential equivalence, improve stability, and be the foundation for arms reduction by both sides.

First Strike

Public comments which expressed concerns about M-X possibly fueling the arms race frequently included statements to the effect that M-X would be a first-strike weapon.

PUBLIC COMMENTS ON THE DRAFT EIS:

"As a first strike weapon, the M-X suddenly commits our defense policy to one of potential aggression. This will only encourage further Soviet one-upmanship; which we would then undoubtedly try to better. This commits our nation to a constant escalation of costly arms improvement. The 1972 SALT I treaty includes a unilateral statement that land-mobile ICBM systems are inconsistent with the idea of strategic arms limitations. With implementation of the M-X, the U.S. is violating its own commitment to halt runaway escalation of the arms race. The Soviets in following suit, would further emphasize the meaningless value of treaties such as SALT I." (A0197-3-003)

"Questions have been raised about the possibility that the M-X is being devised to be used in a first-strike against the Soviets. How do you respond to this allegation? Doesn't this increase the chances of a pre-emptive first-strike by the Soviets?" (A0487-8-001)

Because the M-X missile has good counter-military and accuracy capabilities, some have viewed the system as a first-strike weapon. This is clearly not the case. Of necessity, M-X missiles must have excellent retaliatory capabilities in order to

deter a potential adversary. However, M-X will not be deployed in large numbers so that it could be perceived as a first-strike disarming threat. Furthermore, if M-X were a first-strike weapon the Air Force would not go to such lengths to ensure survivability from a Soviet attack. If M-X were a first-strike weapon, more missiles would be deployed in a less costly basing mode.

The Arms Control and Disarmament Agency has expressed the following thoughts:

> "The provisions of the 1972 Interim Agreement did not address deployment of mobile ICBM launchers. However, a U.S. unilateral statement made at the time of its signing stated that, "the U.S. would consider the deployment of operational land-based mobile ICBM launchers during the period of the Interim Agreement as inconsistent with the objectives of that Agreement."
>
> "Since the effective date of the SALT I Interim Agreement, the conditions which prompted the 1972 statement have changed appreciably. The Soviets have continued to make substantial qualitative improvements to their ICBM forces -- MIRVing payloads, increasing throw-weight and improving accuracy. These improvements now provide the basis for their capability to undermine confidence in the U.S. deterrent by threatening the U.S. silo-based ICBMs -- one of the conditions which the M-X system is intended to offset.
>
> "Deployment of the M-X and improvements to the MINUTEMAN force carry with them certain inherent risks in terms of crisis stability, however. These improvements collectively could provide the U.S. with an apparent capability to destroy a significant part of the Soviet ICBM force in a first strike. A substantial Soviet SSBN and bomber capability would remain, however, along with a potent surviving Soviet ICBM capability. This, together with the fact that M-X is to be based in a survivable mode, should eliminate the possibility that M-X will be misconstrued as a disarming first strike force."

Need for the System

Various comments on the DEIS reflected the views that 1) the Soviet threat is overstated or overestimated, or 2) that adding more strategic capability will serve no useful purpose.

PUBLIC COMMENTS ON THE DRAFT EIS:

> "The myth of the Soviet threat is the largest fraud ever perpetrated on the American public. Never have so many for so little reason given so much to so few." (B0252-5-009)

"We don't need this system, as we have enough ICBMs now to deter an attack and to provide an effective counter attack." (A0748-3-003)

"The main basis of my opposition is the fact that I believe that it is based upon an assessment of the Russian military capability which is factually of a highly questionable nature and, even when it's analyzed on the basis of freely available evidence, still leaves a great deal to be desired in terms of our assessment of the American strength vis-a-vis the Russians. And, without going into a great deal of details on the basis of the actual numbers, certainly the fact that we have something like 10,000 strategic warheads, whereas the Soviet Union at the present time has around 4,500, I think indicates that the United States is not in any second-rate position when compared to the Soviet Union." (B0695-5-002)

"Since we have already reached the point where if there was a nuclear war, no matter what side wins, no side wins, so what do we need more arms for? What good does it do? How many times do we want to blow up the earth, and at what point does this mutual destruction theory stop working?" (B0209-5-001)

"Even a U.S. Admiral, Henry E. Eccles (Ret., U.S.N.) believes that 'The nature and degree to which the M-X system would influence Soviet action is purely conjectural. The present situation with both "strategic" and "theatre" weapons is complex and dangerous enough, without spending enormous resources on a project which will further complicate the situation without any assurances of accomplishing its supposed objective. Therefore, we should abandon the M-X missile system program . . .'" (A1076-8-004)

The growing vulnerability of our ICBM force is acknowledged by the President, Congress, Department of Defense, Joint Chiefs of Staff, and the nation's intelligence community. The threat is real and cannot be ignored.

Rational, thinking people generally view nuclear arms and disarmament in any of three ways. The first category includes those who believe we should unilaterally disarm, and that the Soviets would follow our lead. The second group is made up of those who hold that there are more than an adequate number of nuclear weapons in the world today to destroy each other's way of life and, therefore, no more are required. This is the theory of mutual assured destruction. The final group believes that the Soviet Union and the United States must be "essentially equivalent" in their armaments in order to engage in meaningful arms limitation talks and to agree to balanced, verifiable, mutual arms reductions. This latter belief is the one currently held by those charged with the responsibility of protecting the United States. Deployment of M-X ensures the retention of this essential equivalence for the United States and, therefore, contributes to future balanced arms reductions.

Alternatives to the M-X Project

Alternative systems or sites have been espoused by various commentors as superior to M-X in MPS because they believe them to be cheaper, less vulnerable, etc.

PUBLIC COMMENTS ON THE DRAFT EIS:

"What we need is a strong, lean, tough conventional military force, not reckless proliferation of nuclear weapons. What we also need to do is to begin to use our vast economic, political and psychological weapons to counteract Soviet aggression. This is where our real strength lies." (B0766-4-002)

"We do need the missile, that can't be denied. But if sacrifice must be made to get it, at the very least, let it be a workable deployment such as fixed silos with a good ABM defense. Or put it on ships, the HYDRA method. There are alternatives that can work, and would be far cheaper, both in actual money, and in social and environmental costs. AT THE VERY LEAST, I DEMAND A SYSTEM THAT WILL WORK. MOBILE DEPLOYMENT CANNOT WORK!!" (A0073-6-028)

"I am opposed to the M-X Missile Deployment System on land. I think it should be at Sea and in Space." (B0551-0-001)

"I have no opposition to the M-X missile itself but feel other methods of basing should be explored (such as basing on submarines)." (A0237-7-002)

"We feel other alternatives exist, like modifying Minuteman II silos, that are feasible, less expensive, and more acceptable." (A0070-2-003)

"The viable alternatives and the superior alternatives to the M-X are not dealt with, those specifically being (1) the Center for Defense Information, being made up of retired military personnel headed by Retired Admiral Gene La Rack (sic), has illustrated that cruise missile basing on ships provides us with the superior alternative to basing ICBMs on land. The cruise missile is an extremely cost-effective weapon which can be mass produced. In a U.S. News & World Report of last year, it was documented that the cruise missile program gives us a 20-to-1 spending advantage over the Soviets and I suggest it is an economic advantage that has turned around; the Soviets have an economic advantage when we're trying to pave massive shelters in order to guard our missile system.

"The next alternative, the small underwater mobile system is advocated by a number of people. The Chairman of the Senate Appropriations Committee, Mark Hatfield, has illustrated that for one-seventh of the cost and in far less time with greater survivability, we could deploy the M-X on small submarines. Those were never considered in the DEIS.

"Surface ship deployment. Melvin Laird, former Secretary of Defense; General Maxwell Taylor, former Chairman of the Joint Chiefs of Staff in the Pentagon; Admiral Thomas Moore, former Chairman of the Joint Chiefs of Staff in the Pentagon; George Miller, former head of

the Navy's Offensive and Defensive Strategic Weapons Systems Office; all of these gentlemen and a host of other champions of truth, justice, and the American way of life tell us that we are far better to go to sea in protecting the American land mass than we are in making a target out of two major states." (B0377-0-001)

"Submarines, on the contrary, are invulnerable from the first day the first one is at sea. Sea basing does not ravish our lands, consume our water and our ranges, and destroy the vegetation of our Great Basin. Sea basing does not destroy so much of the life-style of our communities, with crime, boom-bust economic cycles, and by demands upon our education and social services wildly beyond our capacity to meet." (B0709-4-004)

The Air Force, in its strategic role, supports national policy through maintaining a nuclear deterrent capability. The United States has restrained its development and deployment of nuclear weapons. Unfortunately, the Soviet Union has not reciprocated with similar restraint, but has engaged in massive proliferation of nuclear weapons. In its tactical role, the Air Force also contributes to "strong, lean tough conventional military force," and advocates the same position in that respect as expressed in the first comment. Use of "economic, political, and psychological weapons" is not within the purview of the Air Force, but would be implemented, to the extent desired by Congress and the Administration, through other departments or agencies of the government. However, use of the above techniques would not necessarily solve the military problem.

The Department of the Army is responsible for conducting a continuing research and development (R&D) program in Ballistic Missile Defense (BMD) within the constraints of the Anti-Ballistic Missile (ABM) Treaty. These efforts are a hedge against future strategic uncertainties and maintain a technological base for a range of strategic defense options. Although the continuing R&D program is conducted within the constraints of the ABM Treaty, deployment of a BMD system providing effective ICBM defense would likely require renegotiation of that Treaty.

Substantial support was voiced in the public comments for the Shallow Underwater Missile System (SUMS); advocacy of other alternatives was less common. Section 1.1.1 explains why SUMS is not a viable alternative to M-X in MPS. Additionally, the characteristics of thirty basing concepts are summarized in Table 1.1.1-2. M-X/MPS is the only one without a major negative feature with respect to the criteria listed, although some are potentially less costly. Congressional committees and technical panels within the Department of Defense, as well as the Air Force, have addressed the alternatives repeatedly, with general acceptance of MPS as a survivable M-X basing mode available in the near term.

Public comments on SUMS were not consistently supportive.

PUBLIC COMMENT ON THE DRAFT EIS:

"As a preface, I would like to say that I worked for the Navy for 32 years. I was a project engineer on new construction before I retired.

The idea of putting M-X missiles on a submarine--a new submarine cannot be built for half a billion dollars and there are only about five shipyards in the United States that are qualified to build a submarine. Two hundred missiles would be well over a hundred billion dollars for submarines to handle them. That I know." (B0820-9-001)

TRIAD

The need for, composition of, and viability of the strategic TRIAD was also questioned in the public comments, commonly in connection with advocacy of an alternative to MPS.

PUBLIC COMMENT ON THE DRAFT EIS:

"In the beginning of the DEIS, you talk about the TRIAD and how essential it is to the strength of the U.S. deterrent to a Soviet attack. A TRIAD is defined as nothing more than a group of three in the dictionary. This simple definition has been greatly restricted by the Air Force to mean some specified group of three . . . land, sea, and air. The continual repetition of the Air Force partyline limits rational debate. Actually, any three different forms of defense would meet the definition of TRIAD and thereby provide the deterrent capability so sought after.

"The criteria should not be where the defense system is installed at all. It should be, instead, which system components are different from components of the existing or anticipated defense system. If the main components are secrecy and mobility, then surely the land cannot be the best location. The sea or space will suit these components best.

"The Air Force arguments for a land-based system are based on an exceptionally narrow definition of a three leg defense system. The faulty systems analysis which leads to the proposal is a serious flaw which has gone too long without correction. The time to change is long passed. The M-X land-based system is simply the wrong system to accomplish the objective." (B0357-2-002)

The TRIAD, as the term is used in the DEIS, is defined neither by the "dictionary" nor by the Air Force, but by the Department of Defense. The term refers to three diverse strategic forces with differing retaliatory capabilities, which must be countered by different defensive systems, and which have differing failure modes. This array of diverse forces, in combination, is almost impossible to defend against or to destroy. Additionally, since these forces differ both in failure modes and vulnerabilities, the likelihood that more than one will fail or be vulnerable at the same time, leaving only a single leg effective, is extremely remote. This provides a hedge against both enemy defensive breakthroughs and unexpected failures of the system. The TRIAD also requires continuing expenditures by the enemy on defensive systems, reducing his ability to develop additional offensive capabilities.

There is nothing sacred about basing the TRIAD on land, sea, and air. However, no alternatives have been discovered to date that provide military effectiveness and other TRIAD capabilities equivalent to those of the land, sea, and air system, or the same cost effectiveness. The "main components" are not secrecy and mobility, but mutual support among the deployed systems, flexibility in response, and a hedge against the unexpected.

Sea or space as conceptual basing places are not acceptable substitutes for the land-based ICBM. Sea basing raises the possibility of a common failure mode with our ballistic missile submarine fleet. These seaborne TRIAD elements are currently considered highly survivable when at sea and are expected to remain so for some time. However, their invulnerability cannot be guaranteed indefinitely. The other suggestion here, deployment in space, is prohibited by the Multilateral Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space.

No Action

PUBLIC COMMENT ON THE DRAFT EIS:

> "In the Overview, the DEIS downgrades the No Action Alternative. The justification for this is irrelevant to the scope of this project, and seems to suggest (without substantiation) that no action means the area might suffer worse impacts than those of the M-X. This statement represents a prejudice that the public is supposed to conclude on its own. The Air Force again violates the intention of NEPA by overstating (in a prominent place--the Overview) a bias that is groundless in absolute facticity." (A01973-010)

The Air Force is unaware of "downgrading" the No Action Alternative in the Overview of the DEIS. In accordance with the requirements of Section 1502.14(d) of the CEQ Regulations implementing the procedural provisions of NEPA, the No Action Alternative was addressed in the DEIS and is addressed in this FEIS. Please note the last two sentences in the last paragraph of page 1-12 of the DEIS: "This EIS has been structured so that the reader can distinguish between the environment without M-X, the environment with M-X, and the cumulative environment with both M-X and other expected projects. The impact of no action is, in essence, the projected change of the environment without M-X, and is summarized in Chapter 2." The Air Force believes this procedure conforms with both the letter and spirit of NEPA.

Basing Mode Alternatives Not Addressed

A number of commentors viewed the DEIS as being in violation of NEPA because only siting alternatives, not basing mode alternatives, were addressed.

PUBLIC COMMENT ON THE DRAFT EIS:

"Section 102 (2) (D) of NEPA and subsequent CEQ interpretations state that in an EIS there must be a full range of alternatives '. . . which involves unresolved conflicts concerning alternative uses of available resources'. (PL 91-190). The DEIS is in violation of this. All the Action Alternatives propose basically the same thing. The difference is one of geography; altering only slightly the relative impacts. Why are there no scaled down alternatives? Additionally, why are there no blends with other defense deployment systems (like SUMS for instance)? Each Action Alternative is only a geographic variation of the other. Each has the same particular: 200 missiles, 2 OBs, 4,600 shelters and approximately 8,500 roads. Only the difference between the area needs for full deployment (25 sq mi) and split basing (28 sq mi), suggests a variance in project scope. Different cluster arrangements, less shelters per cluster or a scaled down version are examples of real alternatives. As presented here, however, the DEIS offers no real Action Alternatives for the public. Hence, it is in violation of NEPA." (A0197-3-010)

This EIS (in both its Draft and Final form) addresses the selection of a deployment area and operating base suitability zones for an M-X system based in horizontal multiple protective shelters. The comparative environmental effects of alternative basing modes were addressed in the M-X Milestone II FEIS and its Air Mobile Supplement. The horizontal MPS System alternative was selected by President Carter, as described in Section 1.0. At this time, there has been no change in the basing mode for the system, although potential alternatives have been reviewed by the Reagan Administration.* Therefore, for the purposes of this EIS, the method for basing M-X is not an issue. However, because extensive public interest has been expressed in potential alternatives, comparative data on 30 alternative basing modes that have already been studied is provided in Table 1.1.1-2.

Adequacy of the Proposed Alternatives

Other commentors, recognizing that the basing mode was not the issue, nevertheless criticized the range of location alternatives studied.

PUBLIC COMMENT ON THE DRAFT EIS:

"My first criticism of the DEIS is the lack of alternatives considered within the document. The only alternatives mentioned with the DEIS are the split basing or the proposed basing in Texas and New Mexico, and I would suggest to you gentlemen that is totally inadequate when dealing with the strategic issues involved." (B0377-0-001)

*Editors Note: Subsequently, President Reagan announced his plans for strategic force modernization, as noted in the cover letter to this document.

The process and criteria used to identify suitable location alternatives for further analysis were described in Section 5.1 of Chapter 5 of the DEIS and in Appendix A of ETR-1, "Locational Alternatives, under the title "M-X Basing Area Analysis Report." This report again appears as Appendix A of ETR-1 of this FEIS (but not in Chapter 5). The report describes how, during the site selection process which began in 1977, geotechnical, cultural, and environmental criteria narrowed the continental United States down to six suitable regions of the southwest. Refined criteria, which considered military and operational factors, were used to reevaluate those six regions, of which two were identified as having suitable land for M-X deployment. These two regions are the two presented in the EIS as potential deployment areas: the Great Basin region of Nevada/Utah roughly bounded by Las Vegas, Tonopah, and Ely, Nevada, and Delta, Utah, and a portion of the High Plains in the vicinity of Clovis, New Mexico, and Dalhart, Texas.

Opportunity Costs

Others questioned the "opportunity costs" associated with the system, contending that the resources (land, dollars, materials, labor) would be better used in other ways or not used at all.

PUBLIC COMMENT ON THE DRAFT EIS:

> "The Air Force cost estimates for this project which have ranged from an original 33 billion through 66 billion to a recent possible 113 billion are questionable even at the latter figure. If we look at various government subsidized and directed programs we find outlandish overruns in both time and cost. Consumers Power Project of Jackson, Mich. was begun in 1967 with estimated cost at 300 million--to be completed in 8 years. It has cost $3.2 billion so far and is not yet completed. Long Island Light Co. project, begun in 1973 at an estimated 350 million has cost 2.2 billion so far and will not be finished by the 1981 target date--1983, perhaps. There are several other similar projects around the country all with similar records. The M-X proposal is infinitely larger and more complex than any of these. The dollar cost whatever it may be will be the minimal part of the price we will pay if this project is built. We will lose forever the product of this 20,000 sq mile area and the recreational value of areas within it as well as the potential of geothermal occurrences. This loss, which goes on forever, will dwarf any dollar loss no matter how great. There is no way to place a dollar value on 'way-of-life' and heritage." (A0376-3-007)

The Air Force is sensitive to opportunity costs, and has incorporated resource conservation into its planning from the earliest studies of M-X. The aim is for the system to live in maximum harmony with as broad a range of activities as possible--mining, agriculture, ranching, recreation, and energy supply, to name a few. The specific example cited here--geothermal resources--is a case in point. Known geothermal resource areas have been excluded from consideration as deployment areas from the beginning; moreover, the use of renewable energy is a major objective of the program.

Every effort has been made to minimize the costs of the system. Expenditure of any funds must be authorized by Congress on behalf of the people. Congress, in turn, must balance its expenditures "to provide for the common defense" against those "to promote the general welfare," and does not take this responsibility lightly. Extensive hearings and debate precede every military appropriation and all expenditures are scrutinized exhaustively.

The dollar figures quoted in the comment are not those of the Air Force. The projected cost of acquiring the system is $33.8 billion in constant 1980 dollars, with an annual estimated operating cost of $450 million. Numerous other estimates have been published which assume expansion of the system and adjust for inflation to give totals in "then year" dollars. The Air Force does not follow this practice, since inflation rates are unpredictable. Consequently, the Air Force feels that cost comparisons in constant dollars are more meaningful than those incorporating "best guess" inflation rates. Moreover, there are no plans to expand the system; therefore, increases in costs based on expansion are not valid.

In addition, life, liberty, and the pursuit of happiness are likely the most valued of all "opportunities," a sentiment expressed by the following comment.

PUBLIC COMMENT ON THE DRAFT EIS:

> "The force in being has given our nation and the western world peace and security and we've been able to come here and discuss these matters today. The demise of the Minuteman is the end of an era. It is not possible to prove the negative, but I am convinced if this force had not existed, it is unlikely we would be able to discuss these matters here as free citizens of our great country. Why have I made these statements? To put these important matters into a proper historical perspective. I am fully aware that if the unspeakable ever happens, the living will envy the dead, but I do not subscribe to the idea "Better red than dead." The problems in connection with this project are great, but we have no choice. We must proceed with all deliberate speed. Thank you." (B0211-1-004)

The following commentor refers to opportunity costs in another way, characterizing the system as a wasteful monument:

PUBLIC COMMENT ON THE DRAFT EIS:

> ". . . this country has a lot of things to do in the next thirty or forty years. We have to rebuild our energy system. We not only have to rebuild our energy system, we have to worry about rebuilding the way in which we manufacture things, what we use for raw materials, we have a rest of the world that's becoming more populated that has to also rebuild their systems to try to live with the fact that there are going to be twice as many people in a hundred years here. And we're spending a hundred billion dollars to build holes in the ground. I think that if we're going to be secure for the future in this county we have to take a little bit longer

view and build the things that are productive for the country; build the things that are productive for the world and not build things that are just monuments. Thank you." (B0787-0-001)

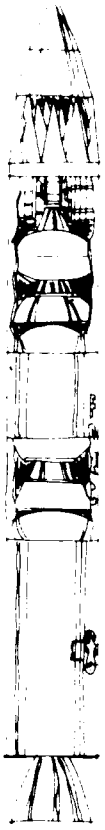
The following views by other commentors are provided as a response to the above comment:

PUBLIC COMMENTS ON THE DRAFT EIS:

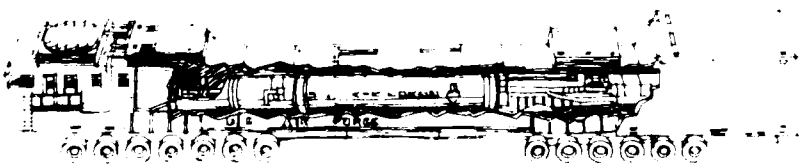
"There may be no tomorrow if we foolishly ignore today's needs. It is a difficult time and there are difficult decisions to be made by you and the administration. Good luck and God speed." (A1097-4-001)

"The M-X is going to create a lot of problems. There's no doubt about that. It's going to cost a lot of money; it's going to create some shortages; there are ways of overcoming that. I feel that the Air Force is trying to do everything in their power to try and overcome it. There are over 1,600 missiles in Russia, most of which have from six to ten weapons or nuclear heads on them. We have slightly over a thousand; very few with much in the way of clusters. The whole thing is we have got to be prepared; we've got to build up just as strong so that maybe, maybe, our people in Washington can negotiate with the idea of both nations dismantling the nuclear armament. You can negotiate from strength. Never throughout history has anybody successfully negotiated from weakness. Thank you very kindly." (B0202-0-002)

"We're out of time and we have to reverse the very serious crisis and momentum that is deeply established. This nation has made the determination that we must go forward with this project. Let me quote for a moment the former U.S. Ambassador to the Soviet Union, Malcom Toone, two years ago when he said 'the Russians have not mellowed towards the United States and could risk military action if they felt they were in a superior strategic position.' We've seen that recently. I would also remind those of you that are interested in doing a little historical research that in 1973, Soviet Premier Breshnev said, and I'm quoting him, 'trust us, comrades, for by 1985, as a consequence of what we are now achieving with detente, we will have achieved most of our objectives in western Europe and a decisive shift in the correlation of forces will be such that come 1985, we will be able to exert our will wherever we need to.' In my view, there are two things the Soviets understand; and the first is force, power, guts. The second is will, national determination to stand up and be counted." (B0005-7-001)



System Description



1.2 SYSTEM DESCRIPTION

This section provides a description of the M-X system, which includes the following basic elements:

- o M-X missiles (200)
- o Protective shelters (4,600)
- o Mobile launchers (200)
- o Special transport vehicles
  - Assembly and Checkout transport vehicles (about 3)
  - Canisterized missile vehicles (about 3)
- o Roads (approximately 8,500 mi)
- o Support facilities
- o Transporters (200)
- o Simulators (4,400)

Three main system components described in this section are: 1) the missile; 2) the facilities and equipment in the designated deployment area; and 3) the operating bases. These descriptions are current; however, refinements are likely during full-scale engineering development to improve performance and reliability, reduce cost, or decrease environmental impacts. Section 1.0, the introduction to this chapter, described some of the changes which have occurred and informed the reader that additional changes are likely in the future.

The M-X is a new missile designed for horizontal movement, which will be assembled at a centralized facility. Relatively few missiles, each on a launcher, will be hidden among a large number of garage-like structures. The missile/launcher assembly will be transported by a large vehicle. However, movements are expected to be relatively infrequent. Most missiles will be moved only when maintenance is necessary, a requirement that is to be minimized by design for low rates of failure. All of the facilities for housing and maintaining deployed missiles will normally be unmanned. People required for maintenance or security will travel from a few small support centers located in the missile basing area. Most of the people required to operate and support the system will be located at two bases, each resembling a small community.

MISSILE (1.2.1)

The M-X missile is designed to be 70 ft long and 92 in. in diameter, and would weigh approximately 190,000 lbs (Figure 1.2.1-1). The current design has four propulsion (rocket) stages; the first three use solid fuel, and the fourth uses liquid fuels. It carries ten reentry vehicles (with nuclear warheads), which may be of the same type currently being deployed on a portion of the Minuteman III strategic missile force. The missile is enclosed in a cylinder (referred to as the "canister") which facilitates its transport and launching. The canister attaches to a launcher, which erects the canister for missile launch. Upon authorized command, the launcher erects the missile to a near-vertical position and uses a steam generator to eject the missile from the canister for launch.

DESIGNATED DEPLOYMENT AREA - OVERVIEW (1.2.2)

The designated deployment area (DDA) is the land where the major M-X system facilities will go. These facilities include 4,600 horizontal shelters (grouped in clusters of 23), 200 cluster maintenance facilities (one per cluster), cluster roads, the major portion of a special interconnecting road (the designated transportation network or DTN), area support centers (three to five), and earth barriers (200, each restricting a missile to its assigned cluster). The DTN and barriers aid in arms control monitoring, a process which enables each party signing an arms control agreement to verify by satellite that no more than the agreed-upon number of launchers are present in the deployment area. The DDA would also contain an electrical power distribution system, a physical security system, buried radio antennas, and a buried fiber optic command, control, and communications network.

Clusters (1.2.2.1)

A cluster consists of 23 partially buried concrete structures (referred to as "horizontal shelters" or "protective shelters"), each capable of housing and protecting a missile launcher, a connecting cluster road network, and a cluster maintenance facility (CMF) (Figure 1.2.2.1-1). Each cluster will have only one missile. The pattern, spacing, and hardness of shelters are factors which affect the capability to survive an attack. The preferred siting pattern is hexagonal with an average spacing of 5,200 ft (but not less than 5,000 ft) between shelters (Figure 1.2.2.1-2A). The third shelter on each side of the cluster road will be left out to break pattern symmetry and enhance survivability. This modified hexagonal pattern is called the "two-thirds filled hex" pattern. The cluster road, which joins shelter sites, is currently designed in a "direct connect" pattern, which requires the least road length (Figure 1.2.2.1-2C). This refinement to the road pattern, from that shown in Figure 1.2.2.1-A and analyzed in the DEIS, occurred too recently to permit reanalysis in the FEIS. The direct connect pattern would reduce land disturbance and require less construction resources than the design analyzed in this FEIS; consequently, the FEIS analysis, which is based on the original pattern, represents a worst case. Deployment in areas (in Texas and New Mexico) with existing section roads makes it necessary to use an alternative pattern, called a "grid." In the latter case, the pattern is no longer an equal-sided hexagon (Figure 1.2.2.1-2B), nor is the "direct connect" pattern feasible.

The Air Force is studying alternative clustering concepts which would have fewer clusters with more missiles and shelters per cluster than currently analyzed.

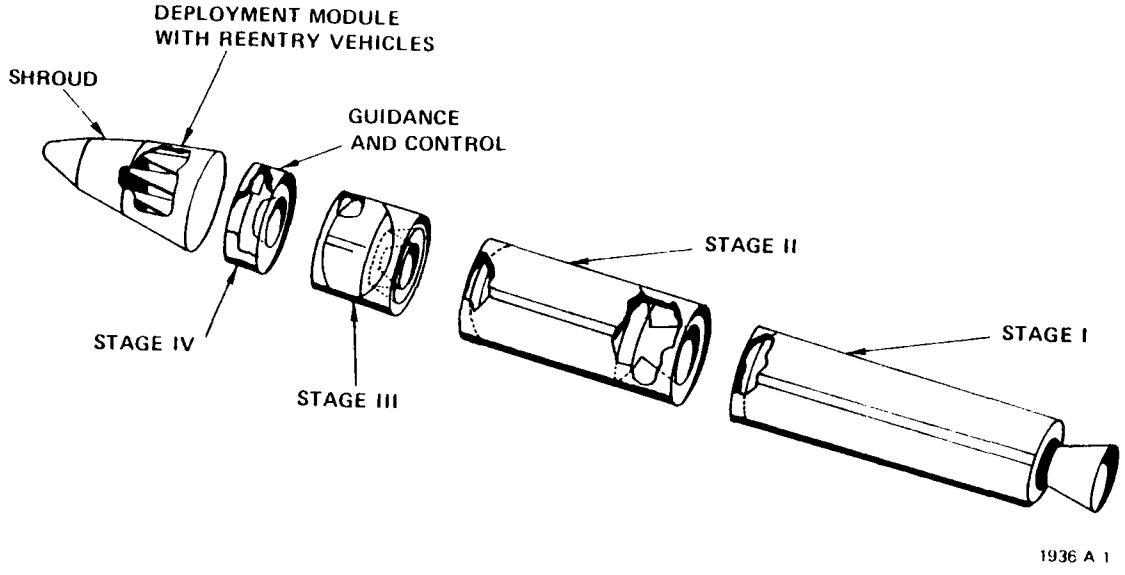


Figure 1.2.1-1. M-X missile.

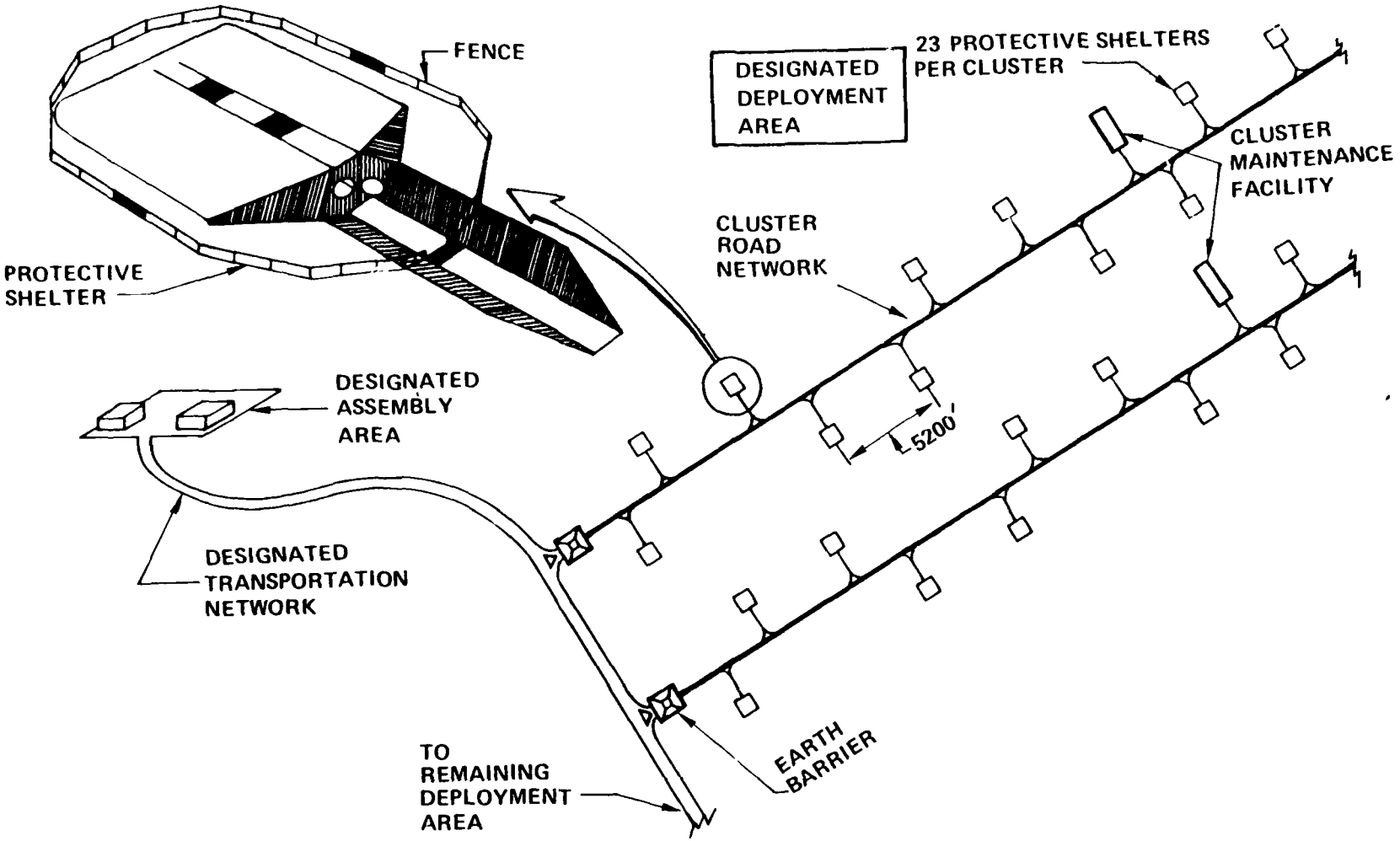


Figure 1.2.2.1-1. Conceptual cluster layout.

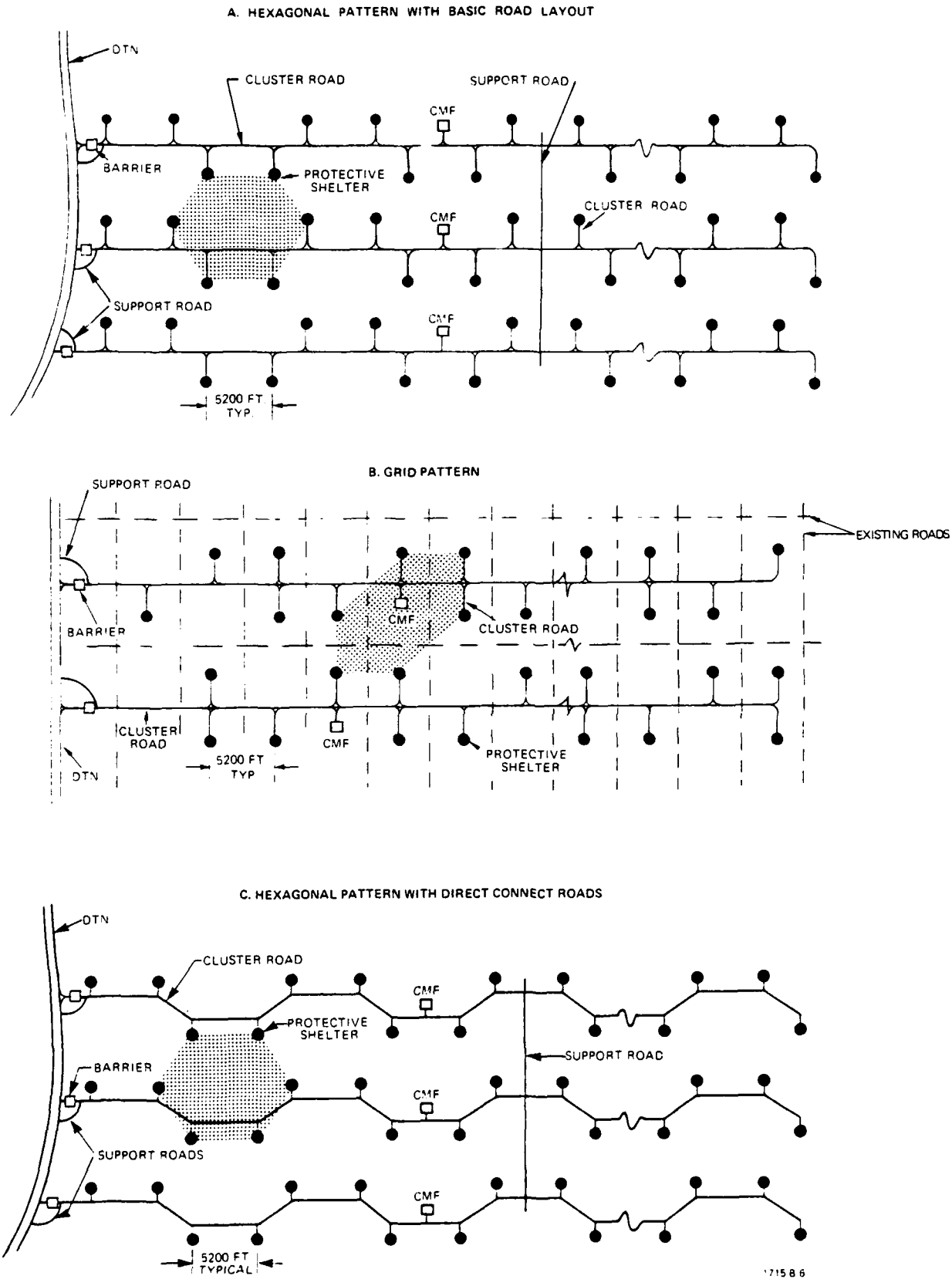


Figure 1.2.2.1-2. Hexagonal and grid cluster patterns.

The system would still retain a total of 200 missiles and 4,600 shelters. There are potential advantages in larger cluster sizes. The number of clusters and CMFs would be reduced from 200, with a corresponding reduction in cost and land-use requirements. This study is not yet complete and this FEIS consequently addresses the 200-cluster design (considered a worst case).

The pattern of shelter siting chosen for M-X provides the greatest flexibility in response to current and future threats to the system. It leaves room for nearly a 50 percent increase in the number of shelters per cluster (which could be accomplished by filling in every third shelter site left open during construction) without expanding the size of the designated deployment area or reducing minimum shelter spacing. The proposed number of 4,600 shelters, with the described combination of shelter spacing and pattern, represents a compromise between minimizing total land requirements and hedging against possible Soviet initiatives. If additional shelters are proposed in the future, a full environmental analysis, including preparation of an EIS, will be required.

Protective Shelters

The protective shelter (shown in Figure 1.2.2.1-1) can house, protect, and conceal the missile/launcher or a simulator (see Section 1.2.2.2 for the definition of a simulator). Each of the 4,600 shelters is a reinforced-concrete, steel-lined cylinder buried under approximately 5 ft of earth. Its concrete and steel door is visible at the front of the shelter. Two plugs in the roof of each shelter can be removed to permit periodic SALT monitoring of shelter contents by satellites. A concrete enclosure for electrical power, command, control, and communications, and environmental control equipment is adjacent to each shelter.

Each protective shelter occupies a 2.5 acre site enclosed by a fence. Security is provided by a variety of sensors (including a short-range radar at selected sites) which are monitored remotely. If suspicious activity is detected, security forces would be dispatched to the shelter site. Features built into each shelter prevent unauthorized access.

Cluster and Support Roads

Cluster and support roads are shown in Figure 1.2.2.1-3. Cluster roads connect each shelter and the cluster maintenance facility within a cluster. These roads will be constructed by the most direct route from shelter to shelter to minimize total road length while avoiding environmentally sensitive areas. Cluster roads consist of a sand-gravel-soil aggregate surface treated with a dust suppressant. They are 21 ft wide (increasing to 27 ft wide at the sharpest permissible turns), with 5 ft shoulders. The maximum grade for cluster roads is 10 percent, with a minimum turn radius of about 500 ft. Approximately 5,900 - 6,200 mi of cluster roads will be required to deploy the entire system. The missile transporter operates exclusively within the cluster and is confined to the cluster road by a barrier, as a SALT monitoring aid. (Barriers are described below.) See Table 1.3.1-4 for Rights-of-Way requirement.

Support roads provide convenient access to deployment facilities. They permit access to the cluster from the DTN or other roads and they allow smaller, more conventional vehicles to enter the cluster for security and maintenance. Support

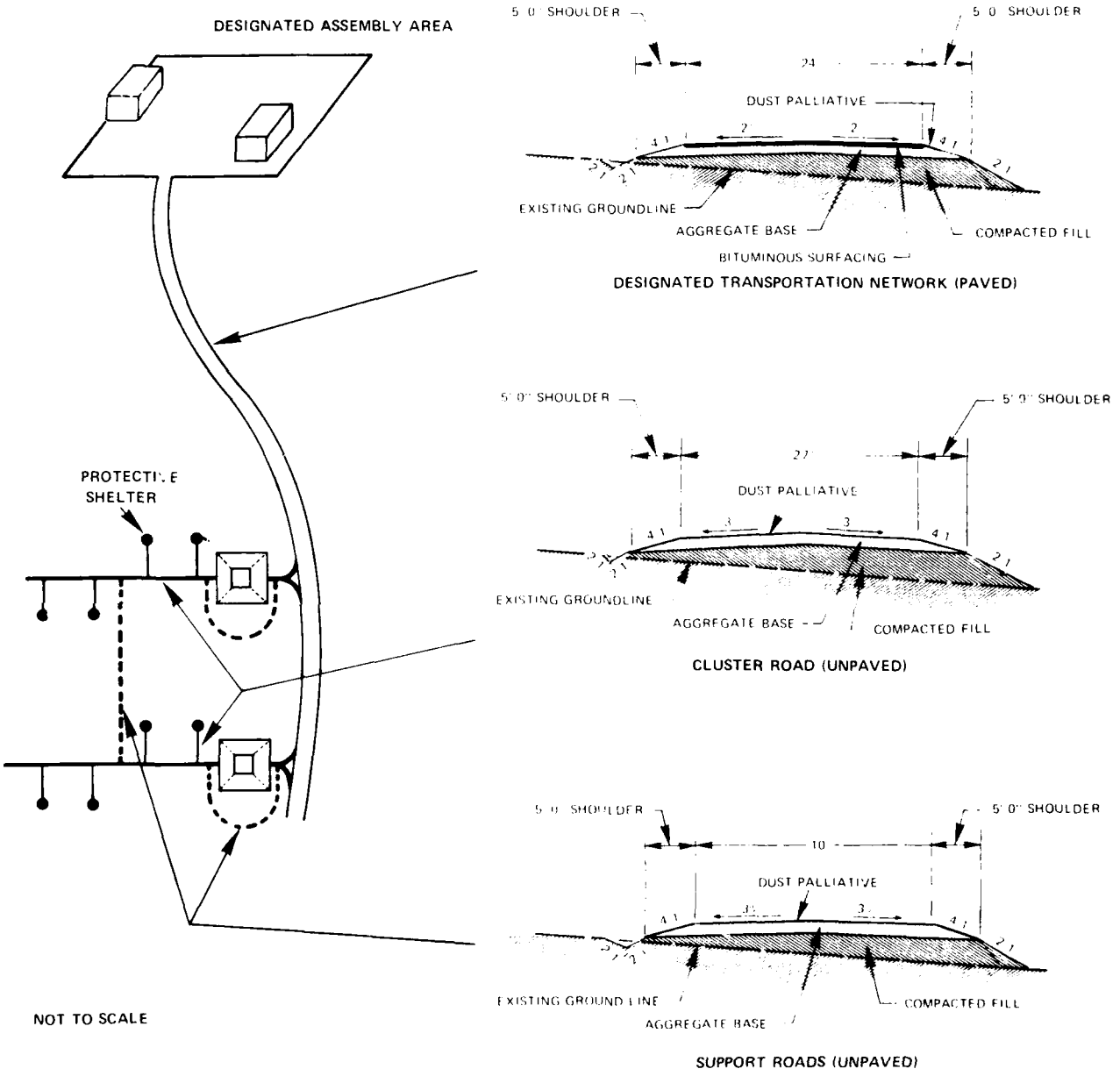


Figure 1.2.2.1-3. Roads.

roads are made of graded earth or sand-gravel-soil aggregate surface treated with dust suppressant. They are 10 ft wide and have 5 ft shoulders. Transporters are incapable of operating on support roads. The missile/launcher, therefore, cannot be moved into a cluster or an adjacent cluster over support roads. Approximately 1,320 mi of support roads will be required.

Subsequent to construction and checkout of the M-X system, the Air Force has no objection to normal use of its roads by the public. However, on occasion, restrictions will be imposed, generally limited to instances when transporter movements are taking place.

During missile movements, missile security and public safety may require temporary public traffic restrictions, but these restrictions will be infrequent and brief. Missiles will be moved about four times per cluster per year. Travel would be restricted while the transporter is on the main section of the cluster road between shelters but this part of the move takes only a few minutes.

Barriers

As stated in Section 1.1.1, one of the five essential criteria for M-X was that it must be verifiable so as to set a standard which can serve as a precedent for verifying mobile ICBM systems on both sides. To meet this criterion and aid SALT monitoring, each missile/launcher is confined to a single cluster (or group of 23 shelters) by a barrier which consists of a 60 ft x 50 ft earthern berm piled 10 ft high in the shape of a flat-topped pyramid. Once the transporter and a missile/launcher are deployed in a cluster, the earthen barrier is erected over the connection between the cluster road and the DTN. The barrier blocks transporter access to the DTN and vice versa. Removal of the barrier, for whatever reason, is detectable by satellite. This helps ensure that the transporter remains in the cluster. As can be noted in Figure 1.2.2.1-2, a support road bypasses the barrier to permit maintenance and security vehicles to enter the cluster.

During normal operations, it will be necessary to remove and replace the barriers on occasion. Section 1.3.3 describes special SALT monitoring procedures.

Cluster Maintenance Facility

Each cluster of 23 shelters will contain a cluster maintenance facility (CMF) (Figure 1.2.2.1-4). The CMF permits onsite maintenance of selected missile, canister, and hardware items. The CMF is fenced and normally unmanned. When required, personnel are dispatched to the CMF from an area support center to make necessary repairs to the launcher, the transporter, and some missile components. The CMF also serves as a garage for the transporter. The cluster maintenance facility is located within a 4-acre fenced site and includes a building with satellite-monitoring ports in its roof, a transfer area, and a parking area. The CMF will also have a permanently installed security alarm system monitored from an area support center. Approximately 45 CMFs will also include a communications tower, about 200 ft high, as shown in Figure 1.2.2.1-4. These towers will not require additional land. Approximately 120 CMFs will include a power distribution center (see Section 1.2.2.5), requiring an additional one-quarter acre at each selected site.

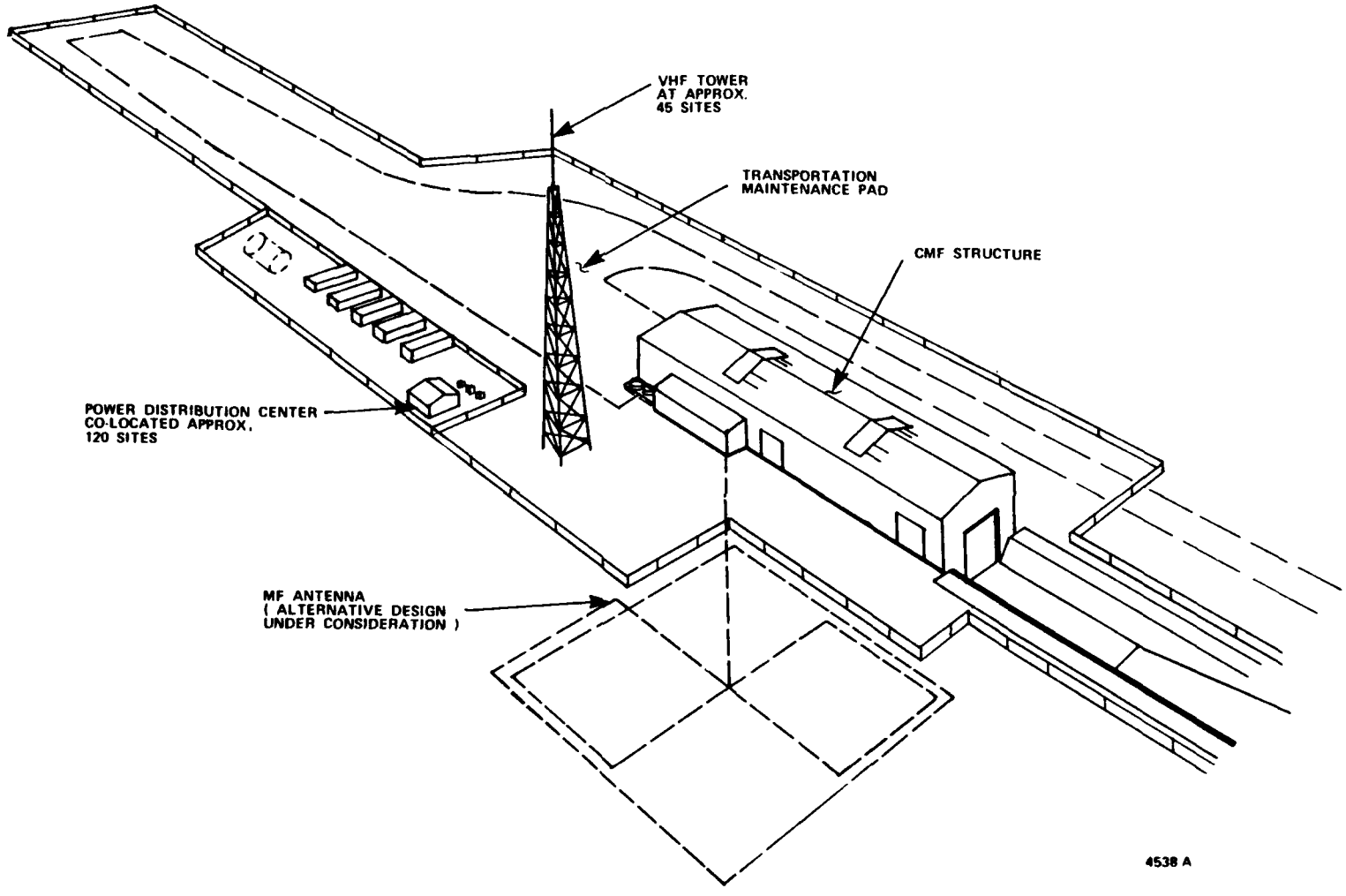


Figure 1.2.2.1-4. Cluster maintenance facility.

Launcher, Simulator, and Transporter (1.2.2.2)

The launcher contains a missile, a canister, and the electronic and mechanical equipment required to monitor, operate, and launch the missile (Figure 1.2.2.2-1). Launchers are transportable among shelters and the CMF. Although missiles are designed to be launched from a shelter, the shelter is not a launcher. Upon receipt of a valid launch command, the canisterized missile/launcher partially emerges from the shelter, the canisterized portion erects to near vertical, and the missile is launched (Figure 1.2.2.2-2). The weight of the built-up missile/launcher assembly is about 500,000 lbs.

Preservation of location uncertainty (PLU) is required for the survivability of the M-X system. Each protective shelter and each transporter must, therefore, appear identical to an external observer whether those facilities or vehicles contain a missile/launcher or not. Simulators will be used to achieve this external "sameness." Simulators duplicate the characteristics of the missile/launcher (weight, balance, and other factors) so that it is not possible for an external observer to distinguish whether a launcher or simulator is in a shelter or on the transporter.

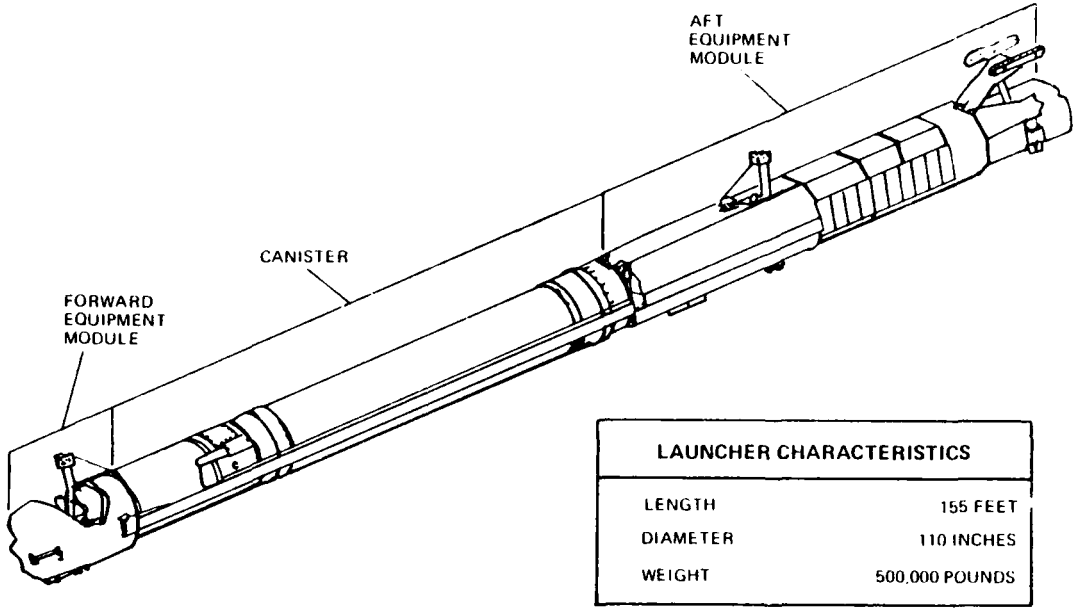
The transporter (Figure 1.2.2.2-3) moves the missile/launcher among the 23 shelters of a cluster at an average speed of about 10 mi per hour. This transporter (one for each missile/launcher) weighs about 1,100,000 lbs empty and 1,600,000 lbs when carrying the missile/launcher or a simulator.

The transporter and missile/launcher or simulator are separable. Only the missile/launcher or simulator is inserted into a shelter. Each cluster will have one missile/launcher and 22 simulators inserted in shelters. When it is not in use, the transporter will be located within the cluster maintenance facility.

Area Support Centers (1.2.2.3)

In addition to the two operating bases planned, three to five Area Support Centers (ASCs) will be sited within the designated deployment area (Figure 1.2.2.3-1) to provide operations, maintenance, and security support for the system. ASCs will provide facilities for equipment storage and repair, security control, maintenance dispatch, helicopter transport and maintenance, and other services necessary to support the system throughout the designated deployment area, which could be dispersed over approximately 9,000 sq mi. The ASCs will be located along the designated transportation network and provide a secure temporary parking area ("safe haven") for missiles in transit. ASCs will be sited so that any protective shelter within their area of responsibility is not more than about 65 air mi away, to allow security forces to arrive via helicopter within 30 minutes. Additionally, maintenance forces will not be required to travel more than 90 ground mi, one-way, so that they can complete their tasks in a single work shift, including travel time.

A typical ASC is expected to occupy approximately a 55 acre site; it provides living, eating, and recreational facilities for up to 300 personnel. About 200 to 250 of these personnel are expected to be military and will be on temporary duty from one of the operating bases for periods up to seven days. The remaining 50 to 100 or so personnel could be civilians hired from communities near each ASC; some of



LAUNCHER CHARACTERISTICS	
LENGTH	155 FEET
DIAMETER	110 INCHES
WEIGHT	500,000 POUNDS

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Figure 1.2.2.2-1. Launcher.

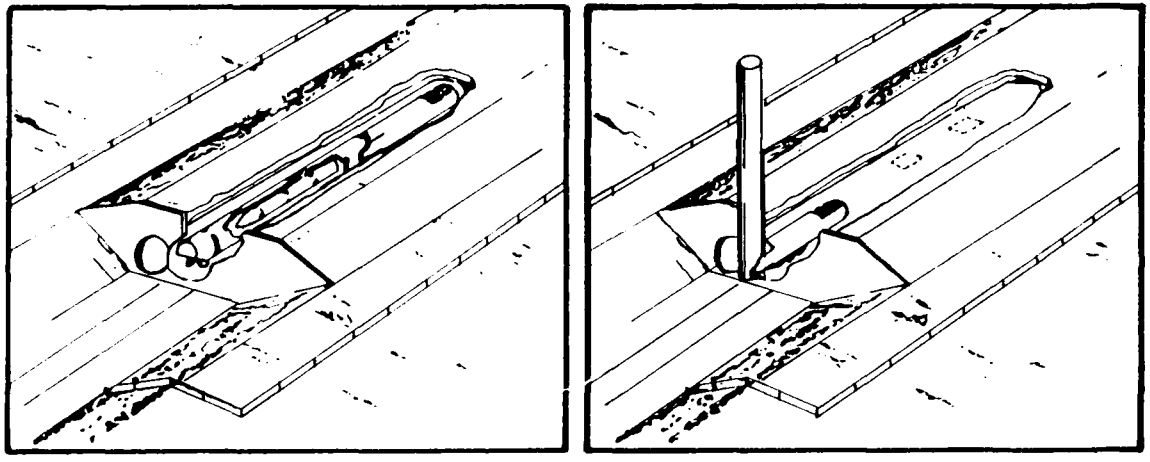

Figure 1.2.2.2-2. Missile launch sequence.

TRANSPORTER CHARACTERISTICS
LENGTH 186 FEET
WIDTH 16 FEET (OVER TIRES) 39 FEET (OVERALL)
HEIGHT 37 FEET 3 INCHES
WEIGHT 1 600 000 POUNDS (LOADED)
TIRES 16
DRIVE MOTORS 8
TURBO GENERATORS 2

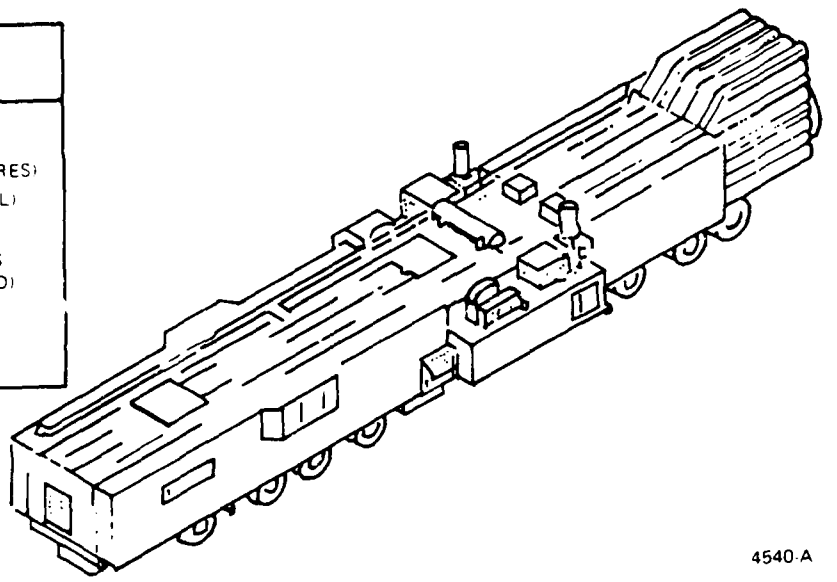

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Figure 1.2.2.2-3. Transporter (used inside cluster).

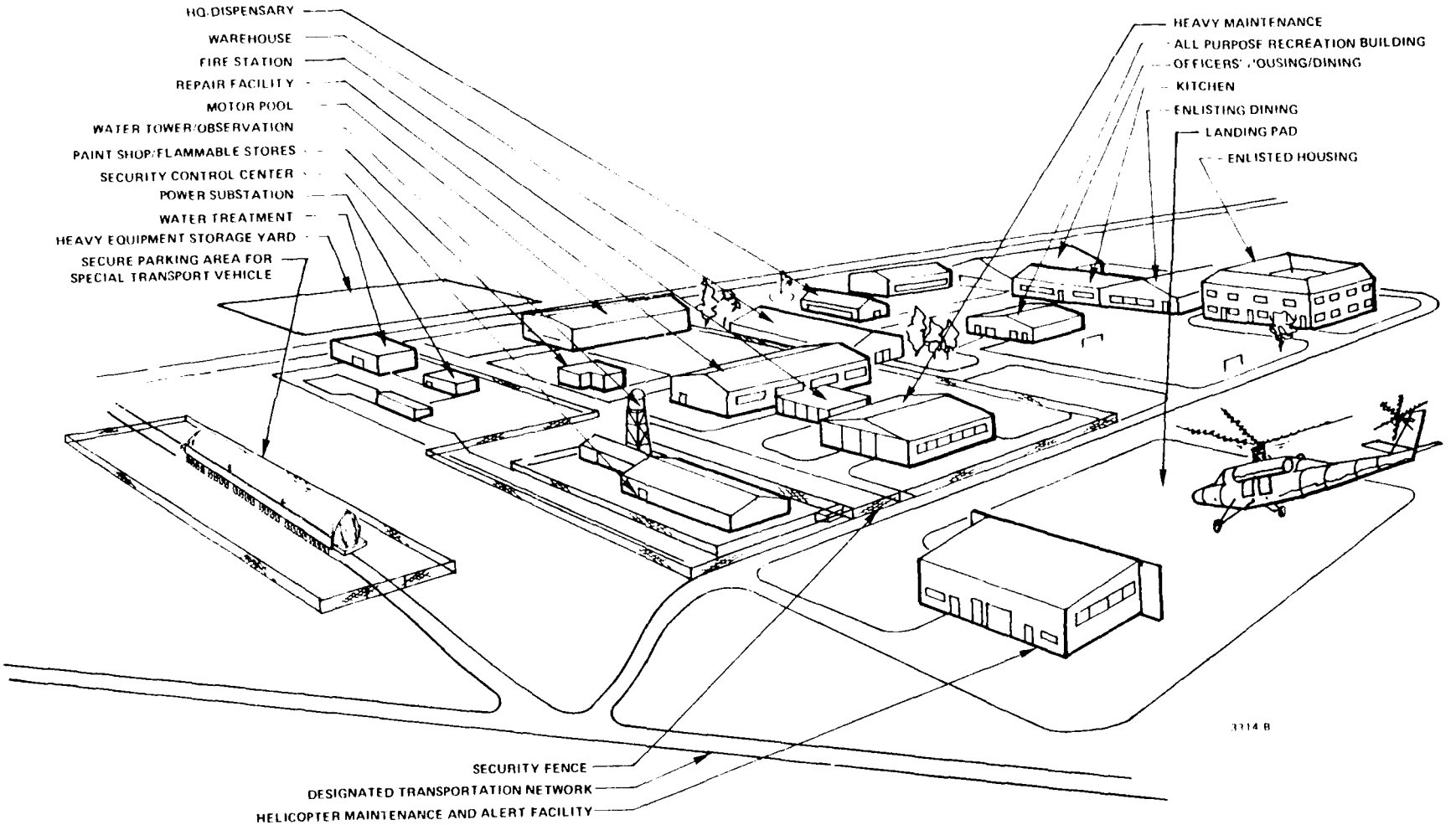

Figure 1.2.2.3-1. Area support center (conceptual).

these would commute daily at each shift change, i.e., at the hours of 8 a.m., 4 p.m., and midnight.

Both the numbers of ASCs needed to support the system and their locations depend on the deployment alternative selected. Potential locations for ASCs are within a few tens of miles of the following communities:

Nevada/Utah	Texas/New Mexico	Split Basing
o Pioche, Nevada	o Dalhart, Texas	o Pioche, Nevada
o Eureka, Nevada	o Hereford, Texas	o Milford, Utah
o Tonopah, Nevada	o Portales, New Mexico	o Delta, Utah
o Delta, Utah		o Dalhart, Texas
o Ely, Nevada		o Portales, New Mexico

Final ASC locations will be chosen during subsequent tiered decisionmaking, as discussed in Section 1.10.2.

Security System (1.2.2.4)

The security system for M-X is being developed to comply with Air Force and Department of Defense security requirements for nuclear weapons storage and handling. These requirements ensure that all necessary security procedures are followed during handling, storage, transportation, and operational activities involving nuclear weapons.

The proposed M-X security system is similar to that used today in Minuteman, known as a point security system. Only small areas or "points" within the M-X deployment area need to be fenced and protected. It is important to note that M-X security is designed to permit the public to use lands surrounding M-X sites for normal day-to-day activities (see Section 1.8, Multiple Land Use).

The security system provides the necessary equipment and manpower to safeguard the handling and storage of missile components at the designated assembly area (DAA: described below in Section 1.2.3.7), transport of the missile between the DAA and the cluster, movement of the missile from shelter to shelter, and storage of the missile while it is on alert in the shelter. The only time that a missile is not under surveillence by security personnel is when it is on alert in one of the 23 shelters of a cluster. Because missiles are emplaced in shelters for long periods of time, shelters must have permanently installed security equipment, monitored from an ASC, to detect unauthorized attempts to enter the shelter site. Multiple types of sensors detect entry to the shelter site and attempts to penetrate the shelter. If unauthorized entry or penetration is attempted or is suspected at either a shelter or CMF site, security teams from the ASC are dispatched immediately via helicopter. An onsite inspection is performed and, if necessary, intruders are apprehended or detained for local law enforcement officers as appropriate. As an aid to inspection of the site, regulations require that a clear zone be provided around all nuclear weapons storage areas. Nuclear weapons storage areas for M-X include shelter sites, CMFs, and the weapons storage area (WSA) located at the Designated Assembly Area (DAA) (See Section 1.2.3.7). The clear zone extends 10 m (about 30 ft) beyond the perimeter fence at each shelter site, CMF, and WSA. Vegetation within each clear zone must not exceed a height of 8 in. In the unlikely event that a shelter is successfully penetrated, special systems will delay access to the nuclear weapons.

As a safeguard against equipment failure or tampering by unauthorized personnel, roving security patrols will conduct random inspections of shelter sites.

In the DEIS, remote surveillance site (RSS) radars were described, including two alternatives for their siting. This system was intended to provide vehicle tracking. A new radar design has replaced the RSS concept. This new radar, called a Deployment Site Security Radar (DSSR), would be similar to that used with existing Minuteman, in that the radar is deployed within the 2 1/2 acre fenced shelter area (see Figure 1.2.2.4-1). It can detect the presence of ground vehicles and low-flying aircraft, but its purpose is not to track them. The purpose of the DSSR is to detect unauthorized activities such as attempts to penetrate shelter sites or attempts to locate the position of a missile by implanting sensors from ground vehicles or low-flying aircraft.

The change (to DSSRs versus RSS) is beneficial because it eliminates the need for approximately 200 quarter-acre security radar sites and their associated service roads and power and communications cable connections. The DSSR could potentially be deployed at as many as 2,300 shelter sites; however, the current estimate is about 500. The final determination of how many DSSRs will be required depends on site-specific layouts to be evaluated in subsequent analyses (see Section 1.10.2, Tiered Decisionmaking). This change, along with others already mentioned, is a recent (and environmentally favorable) one; the FEIS analysis, however, is based on the superseded radar system and therefore should be considered a worst-case analysis.

The radiation exposure levels associated with DSSR operation will be both well below the existing threshold set by the Occupational Safety and Health Act (OSHA) for electromagnetic output of 0.01 watts/sq cm and the more restrictive standard proposed by the American National Standards Institute of 0.001 watts/sq cm at the most restrictive microwave frequencies.

Concerns have been expressed that the security system will either disturb the peacefulness, quiet, and general tranquility of the deployment area, or ultimately require conversion to an "area security" system, in which presence in or travel through or over the area is severely restricted or prohibited. Typical comments expressing these concerns follow.

PUBLIC COMMENTS ON THE DRAFT EIS:

> "There will be great security problems in such a large M-X deployment area and the A.F. will probably have to go from point security to area security because of possible threats. Constant presence of security forces in the M-X deployment areas will reduce citizen's freedom of movement and their liberty which is a constitutional right of all the American people. People will be subject to military surveillance, police teams, helicopters, and ground vehicles at all times. This will destroy the natural resource areas of silence, peacefulness and quiet in the Great Basin." (A0826-7-005)

> "The other area is the espionage area and what the effects of espionage would do to closing the area entirely, going back to area

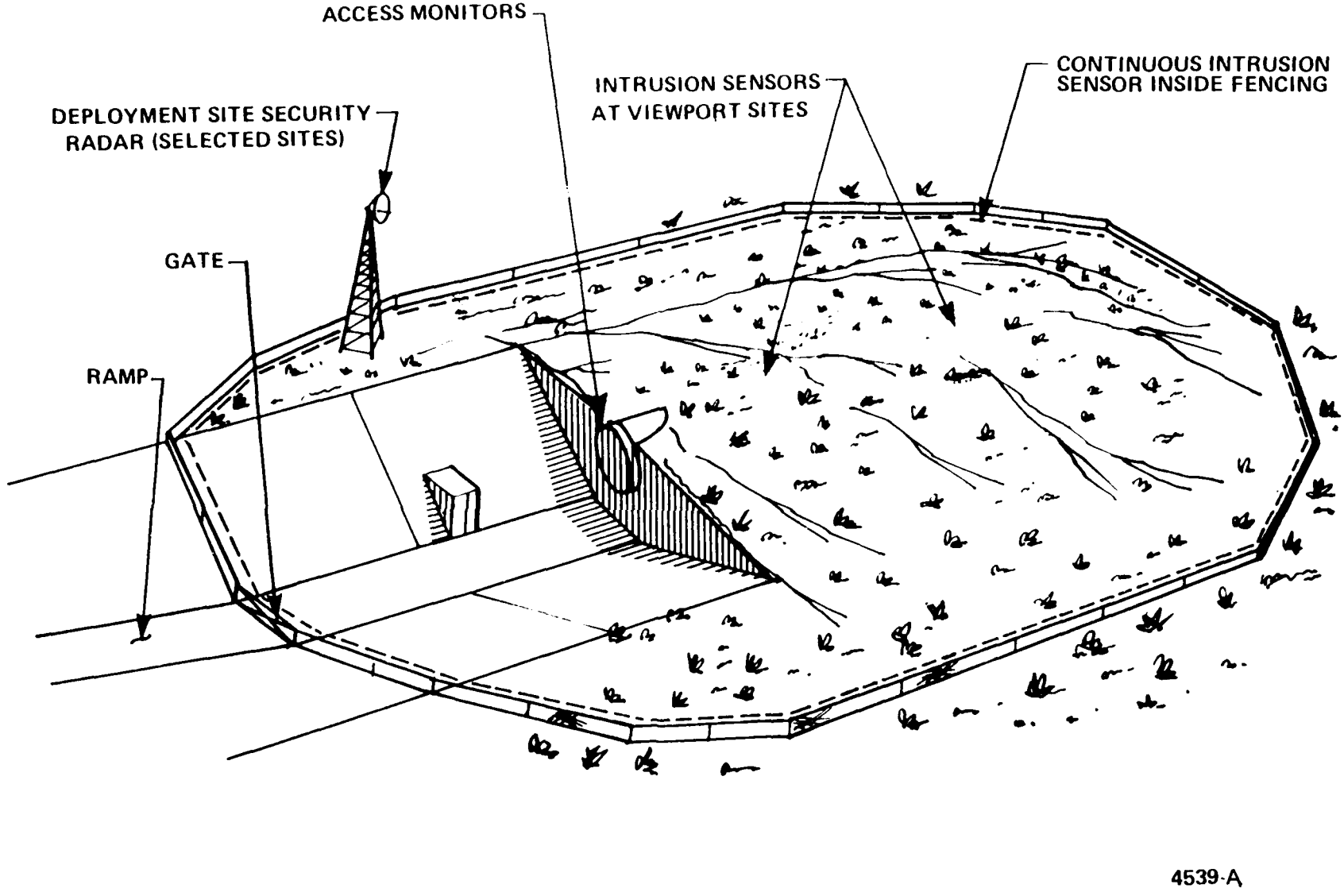

Figure 1.2.2.4-1. Physical security system.

> security. You admit that it will be a thirty year lifespan and the EIS makes points about saying that we can't predict what's going to happen in the future and we must be careful about our security system. It also states that if the PLU, Position Location Uncertainty, is lost, then you're going to have to do something about it. Well I submit, the obvious thing to do about it in thirty years, in which you can't predict the technological advances of the Russians, is to close off the entire area, not only on the ground but in the air." (B0775-5-005)

The Air Force is confident that the physical security of the system can be preserved with point security, based both on its extensive experience with Minuteman and the use of multiple alarms and delay/deny devices. There is, of course, less experience with preservation of location uncertainty (PLU); the plans and status for that program are understandably highly classified and will necessarily remain so. Nevertheless, the Air Force is confident that the location of the missile/launchers can be concealed despite the sophistication of any sensing devices that may be used and in spite of any defections within the operating force. As previously discussed, location uncertainty is a key factor for the survivability of M-X. The M-X system has relatively few missiles hidden among a large number of protective shelters. In order to prevent the determination of the presence or absence of the simulator or launcher in the transporter, it will be necessary to ensure that sensing devices are not used or placed in and around the clusters and OBTS.

Preservation of location uncertainty (PLU) will depend on two activities: (1) the physical security system to indicate potential espionage activity close to the shelters and OBTS, and (2) inspections of the land to verify that sensors have not been surreptitiously implanted in an attempt to determine launcher locations. In order to achieve these objectives, the security patrol will include civilian law enforcement officers such as federal marshals or state or local police officers. Two kinds of land inspections are envisioned. These include (1) routine inspections of the land following the departure of groups or individuals in the deployment area, and (2) scheduled inspections of the land within 150 ft of the fence of the shelter and cluster maintenance facility and the centerline of the roads at the clusters and OBTS with each relocation of the missile/launcher. The scheduled inspections will be accomplished between 6 to 12 times a year at each cluster.

The approach to inspection has not been defined; however, it is expected that the routine inspections may include the use of metal detectors and other devices, probably hand held, and perhaps probing of the surface to verify the presence or absence of a sensing device. Similarly, the scheduled inspections may include the use of detection equipment on motorized vehicles in addition to the use of hand-held detectors. In any case, the inspections - both routine and scheduled - will be accomplished in a manner that will be nondestructive to the environment. If the equipment used for the scheduled inspections includes the use of vehicles driving off the cluster road, then a right-of-way will probably be needed. On the other hand, if the vehicle can drive the cluster road and the inspections be made from the vehicle or by hand-carried equipment, no new authorizations will be necessary.

As previously mentioned, the inspection approach has not been fully defined. Therefore, this FEIS is based on a clear area (possibly a right-of-way of 150-ft

radius from each horizontal shelter and centerline of the cluster road) for inspections of sensing devices. As discussed in Section 1.8, "Multiple Land Use," most uses authorized under the public land laws can be accommodated within the 150-ft inspection right-of-way. This represents a worst-case analysis.

In accordance with FAA requirements, there will be a 500 ft restriction on flights directly over the protective shelters, but this will not impede normal air travel, or even such activities as predator control or crop dusting from low-flying aircraft.

Helicopter dispatches in response to alarms are expected to be relatively infrequent. For operational reasons, the Air Force intends to minimize them, as well as vehicle movements on the ground. In general, the peace and tranquility of the deployment area is not expected to be disturbed.

Finally, the Air Force could not, on its own authority, impose an area security system without congressional approval. Congress has directed the Air Force not to use area security, and can be expected to maintain this prohibition in the future.

Electric Power (1.2.2.5)

Electrical power to meet major system construction and operational needs will be purchased from utilities or generated onsite.

As shown in Figure 1.2.2.5-1, transmission lines from utilities will deliver power to approximately 120 power distribution centers, which are normally unmanned and are co-located with selected CMFs (see also Figure 1.2.2.1-4). Since the lines from the power sources to the distribution centers will be owned by the utilities, other users could also be supplied. Each power distribution center will have standby diesel generators to provide electrical power to the shelters if commercial power is interrupted. Power is distributed from distribution centers to shelters via underground cable. These underground cables will follow M-X or other roads to minimize the amount of land to be disturbed. The power distribution system is being evaluated to determine the cheapest, environmentally preferred method of distributing power throughout the deployment area. Refinements to the number, size, or location of power distribution centers may occur after careful consideration of possible improvements. Utility power is expected to be available for the operating bases.

Alternative power sources will be used to the maximum feasible extent to reduce M-X requirements for utility power. M-X facility development is considering energy conservation, passive solar design, and other alternative renewable energy systems for cost-effective application to satisfy M-X energy requirements. Some of the potential sources of renewable energy include solar, wind, geothermal, and bio-mass systems. The Departments of Defense and Energy have implemented a major program to develop renewable energy systems (RES) capable of meeting M-X technical and schedule requirements for energy. Phase I of the "Joint DOD/DOE M-X/RES Project" involves engineering development to determine the feasibility of RES applications for M-X. Phase II includes design, testing, and evaluation of selected RESs. Initial RES determinations will be made by early 1983. By late 1984, the viability of RES will be determined for acquisitions consistent with M-X deployment schedules. Determining the feasibility of RES for M-X application will

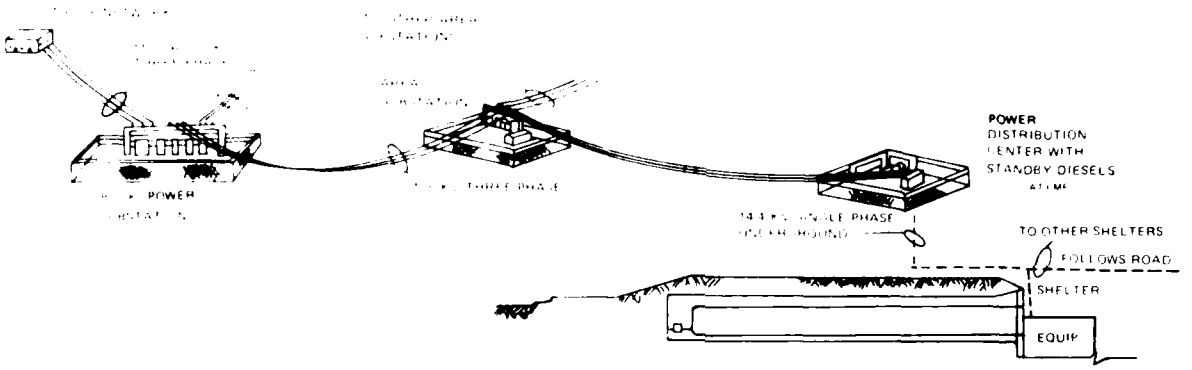

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Figure 1.2.2.5-1. Electrical power distribution.

significantly advance U.S. renewable energy research and thus support the national goal to become energy self-sufficient. Details of the DOD/DOE M-X/RES project are contained in ETR-24, "Energy," and FEIS reference documents.

Command, Control, and Communications (1.2.2.6)

The command, control, and communications system monitors equipment, power, security and other key functions of the M-X system. It has safeguards which permit missile launch only when authorized and which inhibit unauthorized launch attempts should they occur. The communications network provides a necessary link among operations, security, and maintenance personnel.

Day-to-day communications will use a fiber-optic cable network connecting shelters, cluster maintenance facilities, deployment site surveillence radars, area support centers, and operations control centers (Figure 1.2.2.6-1). The underground cable network will be buried next to M-X roads or existing roads to reduce land requirements and disturbance. The communications system includes medium frequency (MF) radio as back-up should the cable become inoperative. The MF radio will use antennas buried at each shelter site to permit control of the M-X system by airborne launch control system aircraft.

Another radio system used within the deployment area is called the Maintenance and Security (M&S) communication system. M&S is a secure radio system consisting of mobile VHF radios and fiber-optic cables. A VHF radio tower will be constructed at approximately 45 CMFs (see Figure 1.2.2.1-4) to receive transmissions from mobile radios and retransmit these signals over fiber optics to the ASC or the operations control center (Section 1.2.3.11). Communications from the OCC or ASC travel over fiber optic cables to the VHF radio towers where they are retransmitted to mobile radio users. This tactical radio system is very important to day-to-day field operations. Electromagnetic exposure levels from these VHF radio towers are well below the threshold established for human health.

Designated Transportation Network (1.2.2.7)

The designated transportation network (DTN) is a heavy-duty road connecting each cluster with the designated assembly area (DAA) (Figure 1.2.2.1-3). The DTN is the only road over which the missile can be moved between a cluster and the DAA. The missile and its launcher are transported over the DTN by special transport vehicles (Figure 1.2.2.7-1). During initial deployment of the system, called assembly and checkout (A&CO), the canisterized missile assembled on its launcher is transported over the DTN via the A&CO launcher vehicle. After deployment, the missile may require occasional return to the DAA for maintenance or repair. In this case, the canisterized missile will be removed from the launcher and transported by another special vehicle, the canisterized missile vehicle.

The DTN analyzed in this EIS is between 1,300 to 1,500 mi long, depending on the deployment area or areas selected. Current estimates of the DTN length are somewhat lower as explained in ETR-31. It will be paved and will have a width of 24 ft with 5 ft shoulders and a maximum grade of 7 percent. Maintaining the DTN (and other system roads) will be the Air Force's responsibility.

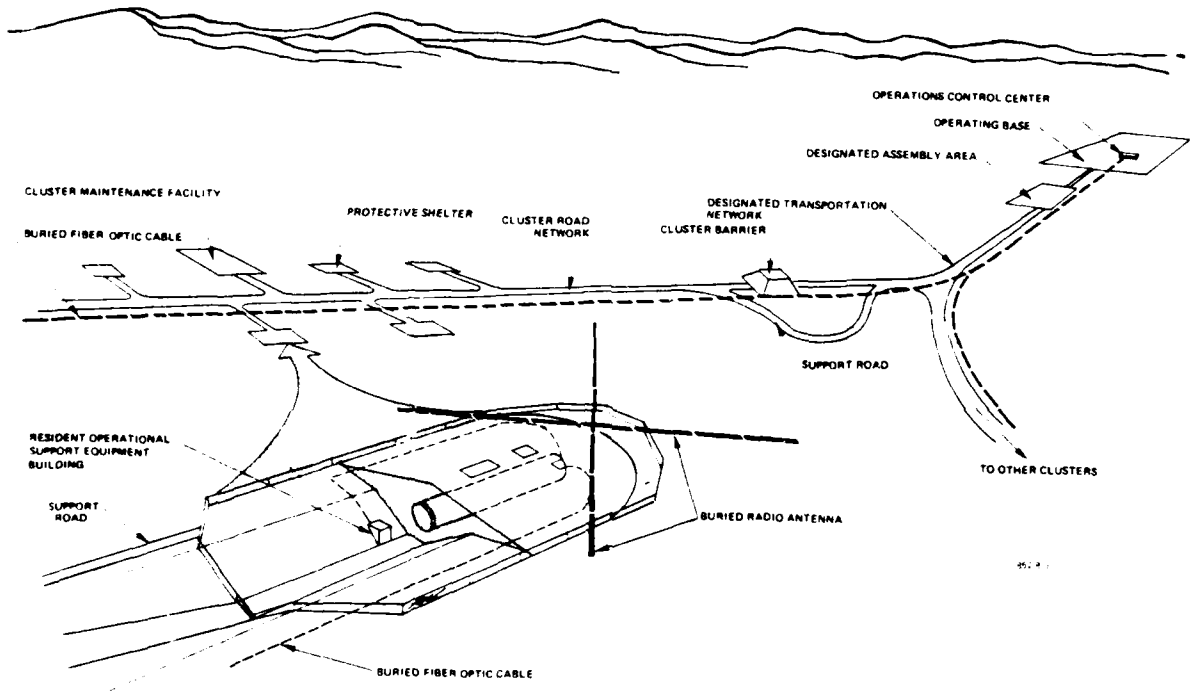
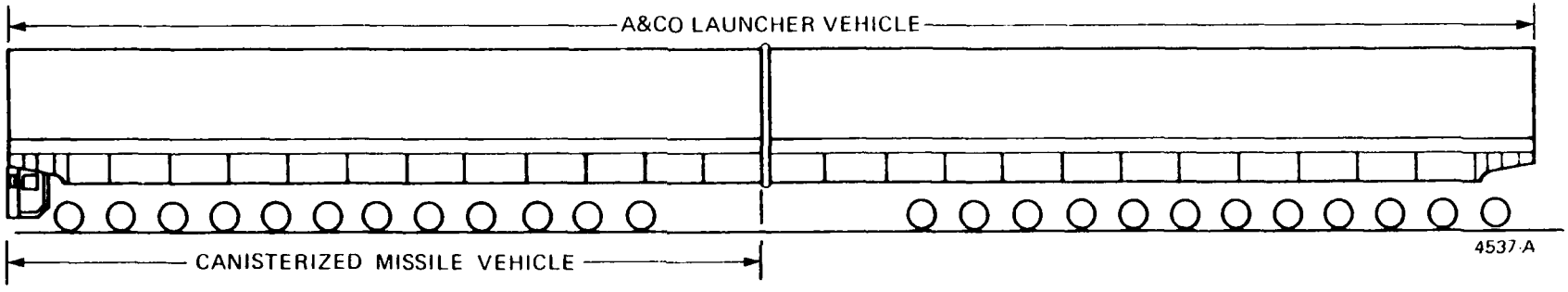


Figure 1.2.2.6-1. Command, control, communications buried element.

A&CO LAUNCHER VEHICLE CHARACTERISTICS
LENGTH: 165 FT
WIDTH: 14 FT 8 INCHES
HEIGHT: 22 FT
WEIGHT: 1,050,000 LBS (LOADED)
AXLES: 48 (24 PER SIDE)
TIRES: 192



CANISTERIZED MISSILE VEHICLE CHARACTERISTICS
LENGTH: 82 FT 6 INCHES
WIDTH: 14 FT 8 INCHES
HEIGHT: 22 FT
WEIGHT: 594,000 LBS (LOADED)
AXLES: 24 (12 PER SIDE)
TIRES: 96

Figure 1.2.2.7-1. Special transport vehicles (used outside cluster).

OPERATING BASE COMPLEXES (1.2.3)

Two operating bases (OBs) will be constructed to support M-X operation. Under full basing they would be similar but not identical (the difference is explained below) and are distinguished from each other by the terms "first operating base" and "second operating base." Each was estimated to require about 4,200 to 8,200 acres, but current estimates are lower. Each will provide personnel and technical support for approximately one-half of the M-X system.

Operating bases provide personnel administration, warehouses, automotive maintenance, roads, buildings, utilities maintenance, and operational control of the M-X system. The bases also provide medical care, housing, shopping facilities, and recreational facilities for military personnel and dependents. Current Air Force planning provides onbase primary education for the children of permanent residents of the base. Normally, onbase schools are staffed and run by local school boards.

About 13,000 to 14,000 employees are needed to operate and maintain the M-X system. Including dependents, the total population for both operating bases is estimated at 30,000 people. Approximately 17,000 people (civilian workers, military personnel and their dependents) would live at or near the first base and 13,000 at or near the second base. Some military and all civilian personnel will live in communities near the bases.

Since the bases may be in isolated locations, essentially all the housing for Air Force families is planned for onbase construction. As the communities near the operating bases grow and can supply housing, some military personnel may elect to live in the community and onbase housing construction could be reduced. This FEIS assumes that 80 percent of military personnel will live onbase and 20 percent in the local community.

Operating base planning goals are to: (1) maximize energy efficiency; (2) optimize land use; (3) minimize facility maintenance; (4) provide a high quality of life; and (5) minimize disruption of the natural environment.

Major facilities for the first operating base to be constructed are shown in Figure 1.2.3-1. The number and type of facilities to be constructed depends on whether full basing or split basing is selected (the difference is explained in Section 1.1.2). Table 1.2.3-1 shows which facilities are needed for each alternative configuration.

For full basing, the first base is larger because it provides assembly and repair of missile/special vehicle components, training, and other functions unique to the M-X mission. Therefore it contains more facilites and people than the second operating base. For split basing, the second operating base nearly duplicates the first.

Each of the OB facilities is discussed below.

Airfield (1.2.3.1)

Provisions will be made at each OB site for a 12,000 ft airfield runway with parallel and cross taxiways. Flightline facilities for aircraft operations and

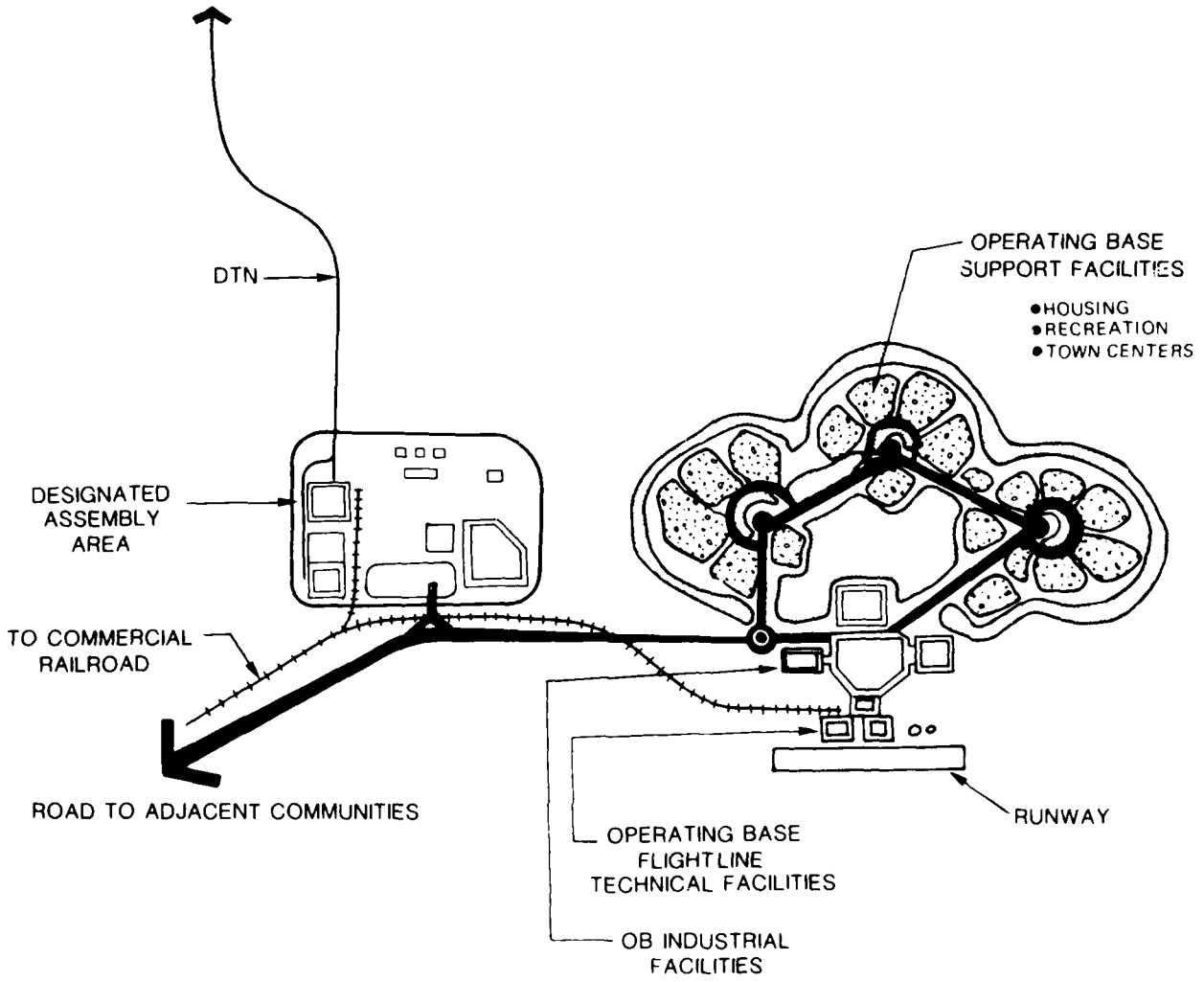


Figure 1.2.3-1. Conceptual layout of major facilities for first operating base.

Table 1.2.3-1. Operating base complexes for full or split basing.

Facility	Full Basing		Split Basing	
	First Base	Second Base	First Base	Second Base
Airfield	X	X	X	X
Workcenter	X	X	X	X
Community/Neighborhood Center	X	X	X	X
Recreation Areas	X	X	X	X
Housing Areas	X	X	X	X
Designated Assembly Area	X		X	X
Assembly and Checkout Contractor Support Area	X		X	X
Operational Base Test Site	X		X	
Dedicated Training Area	X		X	X
Operations Control Center	X	X	X	X
Alternate Operations Control Center			1	1
Construction Contractors' Marshalling Yard	X	X	X	X
Life Support Area	X	X	X	X
Railspurs	X	2	X	X

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[1]Required but located at Area Support Center.

[2]Desirable but not mandatory.

maintenance will include aircraft hangars, base operations, command post, control tower, aircraft maintenance and testing, meteorological measurements, fuels storage and dispensing, etc. The airfields will be open to joint civilian and military use.

Workcenter (1.2.3.2)

The workcenter includes facilities for administrative functions such as headquarters staff, personnel, security police, social actions, etc.; support functions such as base civil engineering (for facility maintenance, repair, operation), fire protection, vehicle operations and maintenance, communications, supply administration and warehousing, etc.

Community Center (1.2.3.3)

The community center provides facilities for the wellbeing of personnel assigned to M-X. These facilities include a commissary, base exchange, library, theater, hospital, post office, bank, credit union, etc.

Neighborhood Center (1.2.3.4)

A neighborhood center may be included to provide neighborhood services to family housing areas. They could include an elementary school, youth center, youth oriented recreation areas, base exchange branch, chapel, etc.

Recreation (1.2.3.5)

Facilities will be provided for personnel recreation. They could include athletic fields, gymnasium, swimming pools, bowling center, hobby shops, golf course, and officers' and noncommissioned officers' clubs.

Housing (1.2.3.6)

The housing element includes family housing, unaccompanied personnel quarters, visiting/temporary quarters, and airmens' dormitory/dining facilities. Housing units are to be clustered within each neighborhood or housing area to reduce land requirements. All civilian and approximately 20 percent of military personnel are expected to occupy offbase housing.

Designated Assembly Area (1.2.3.7)

The Designated Assembly Area (DAA) contains, within approximately 1,950 fenced acres, technical facilities required for missile/canister/launcher final assembly and associated storage and maintenance facilities. Once assembled, these components are transported to the deployment area on an A&CO launcher vehicle over the DTN. Missiles returned to the DAA for major repair will be transported utilizing the canisterized missile vehicle (see Figure 1.2.2.7-1).

The DAA ordnance storage and reentry system assembly/storage areas will comply with applicable safety requirements. See Section 1.5.1 for details.

If full system deployment in a single area is selected, the DAA will be located at the first operating base only. If the system is split between two deployment areas (split basing), each deployment area will have a DAA.

Assembly and Checkout Contractor Support Area (1.2.3.8)

A contractor support area (CSA) in the DAA provides facilities required by M-X system contractors. The CSA could include an office building, a vehicle maintenance shop, a rail staging area, storage areas and buildings, shops, and utilities.

Operational Base Test Site and Dedicated Training Area (1.2.3.9)

The operational base test site (OBTS) contains DDA prototype shelter and maintenance facilities for weapon system test and evaluation (Figure 1.2.3.9-1). The OBTS will be close to the DAA and located in terrain similar to that of operational clusters.

The purpose of the OBTS is to perform system level integration testing of missile and basing components. While missile flight testing will be accomplished from launch points at Vandenberg AFB, basing components will be tested predominately in the operational environment created at the OBTS. The OBTS testing will include, but is not limited to, verification of shelter and road construction techniques; missile movement and concealment procedures; transporter-to-shelter docking techniques; communication system operation; and electromagnetic radiation effects on shelter components.

Because technical measurements associated with some of these activities must be conducted in an interference-free environment, public activities must be prohibited within a one-mile radius of selected portions of the OBTS during the initial phases of system testing. A fence will be erected to identify the one mi radius restricted area around two of the shelters beginning January 1984. The fence will be removed when preliminary field testing is completed, and the land is returned to the public domain. The public can then resume use of this area. By the time the system achieves its full operational capability date in 1989, the only fenced areas within the OBTS, barring unforeseen developments, will be the 2 1/2 acre shelter sites, the CMF, and the test support building.

Some of the facilities within the OBTS are: a road and utility network, communications, three horizontal shelter sites, a test support building, and a cluster maintenance facility. These facilities are to be used for engineering development and testing and will not be used for training purposes with the possible exception of the cluster maintenance facility.

Training facilities will be located in a Dedicated Training Area (DTA) contiguous to the OBTS (see Figure 1.2.3.9-1). The DTA includes shelters, a barrier, and a docking-training facility, and could include maintenance and other support facilities. Additional training facilities (classrooms) will also be provided onbase. An evaluation is being conducted to determine if it is beneficial to move the dedicated training area closer to the operating base. This move would reduce daily travel distances from the OB to the DTA and eliminate the potential for adverse effects of training conducted near the OBTS which could affect pertinent testing results. These factors must be evaluated and weighed against the benefit of using some buildings (e.g., the CMF) for both OBTS and DTA support.

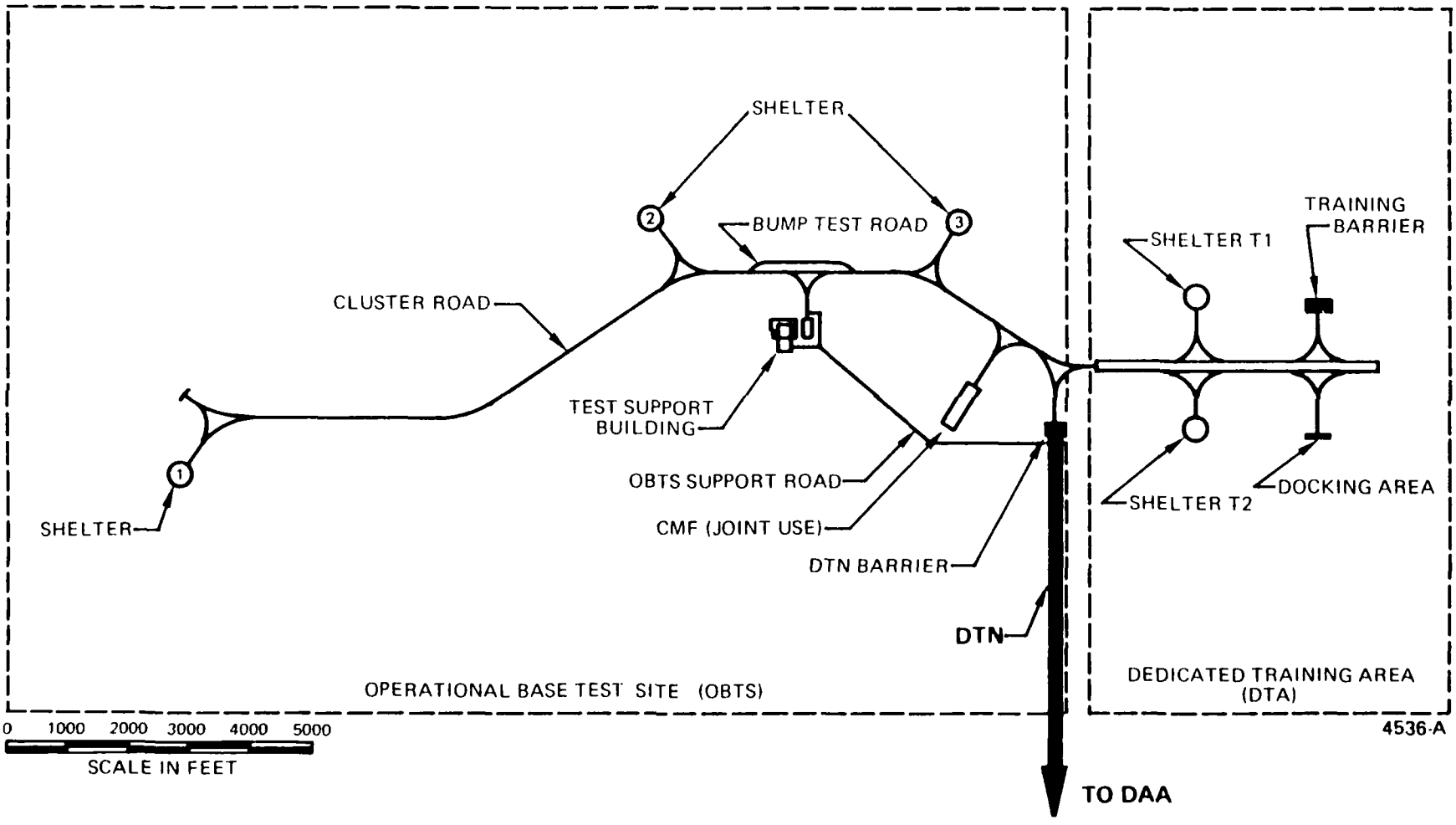


Figure 1.2.3.9-1. Operational base test site and dedicated training area.

Roads and Utilities (1.2.3.10)

Roads and utilities are essential system elements and are among the first to be provided to and on the OB complex. Roads are needed for the movement of people, material, and equipment during the construction, operation, and maintenance phases of the program. Defense access highways are required to provide the link between the bases and county, state, and federal highways. There will be roads to connect the housing area with work, neighborhood, community, and recreational centers. Additionally, there will be the heavy duty DTN to connect the DAA with both the OBTS and with shelter clusters in the deployment area. Other roads provide a transportation link to nearby railheads (which are delivery points for heavy equipment, missile components, and supplies) and also interconnect with the state highway system. Utilities include such items as water, power, waste disposal, communications, and provisions for heating and cooling. Roads and utilities will be provided first at the OB complex and then be constructed in the deployment area in sequential fashion as described in Chapter 2 and ETR-31, "Construction."

Operations Control Center (1.2.3.11)

The Operations Control Center (OCC) at each base is the center for M-X operations. Each one combines supervision, missile launch, maintenance and security control and other necessary functions into one facility for approximately one-half of the force under normal operations. Either OCC can assume full control of the entire system when necessary.

For split-basing, each bi-state deployment region would have two control centers, one at the operating base and an alternate at one of the Area Support Centers.

Construction Contractors' Marshalling Yard (1.2.3.12)

An area would be provided for use by the construction contractor as a marshalling yard for storage and transshipment of the bulk of construction materials and equipment. This could include office facilities, storage areas and facilities, maintenance shops, etc.

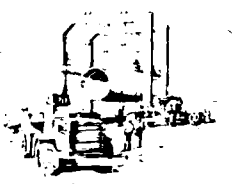
Life Support Area (1.2.3.13)

Contractor personnel will be provided an area containing life support facilities such as housing, dining, medical, shopping, recreation, administration, etc. Current estimates require about 20 life support camps to support construction of the system. Each life support area requires approximately 25 acres. Life support areas are also commonly referred to as construction camps. The Introduction, Section 1.0, provides a more thorough explanation of the life support camps and plans included to permit dependents to live there.

Railspurs (1.2.3.14)

The first operating base will have, and the second may have, railspur connections to the commercial railroad system. They will be used to support construction, and subsequently for delivery of general supplies and missile components (at the DAA only).

System Construction, Assembly and Checkout (A & CO), Operations and Decommissioning



1.3 SYSTEM CONSTRUCTION, OPERATIONS, AND DECOMMISSIONING

This section addresses the principal phases of the program: construction, assembly and checkout (A&CO), operations, and decommissioning.

Figure 1.3-1 shows major M-X program milestones through 1989. In September 1979, the President authorized full-scale engineering development, which will continue until authorization to manufacture missiles, vehicles, and supporting equipment is given in mid-1983. A separate environmental impact analysis is planned as a contribution to the production decision. Shortly before the production decision is to be made, the first flight test will occur from Vandenberg AFB, California. At the time of initial operational capability (IOC) in 1986 an operating base and ten missiles with associated shelters and other necessary facilities are to be operational. All 200 missiles, 4,600 shelters, and support facilities are planned to be operational by 1989.

Achievement of an IOC in 1986 requires that construction of roads, utilities, and the OBTS begin in mid-1982, making it critically important that the land for these facilities becomes available soon enough. Construction of the first OB facilities would follow in 1983 and continue through 1987. The second OB would be constructed between 1985-1989.

Some commentors have expressed concern that the system will have no deterrent value until all 4,600 shelters have been deployed, which would not be before 1989.

PUBLIC COMMENTS ON THE DRAFT EIS:

"M-X decoy shell basing will not be hardened against Soviet destruction . . . until almost all its shells and missiles are in place 10 years from now . . .". (B0709-4-004).

"It's not useful until at least two hundred and thirty shelters are built and then you have a lousy ten missiles which carry eight or nine

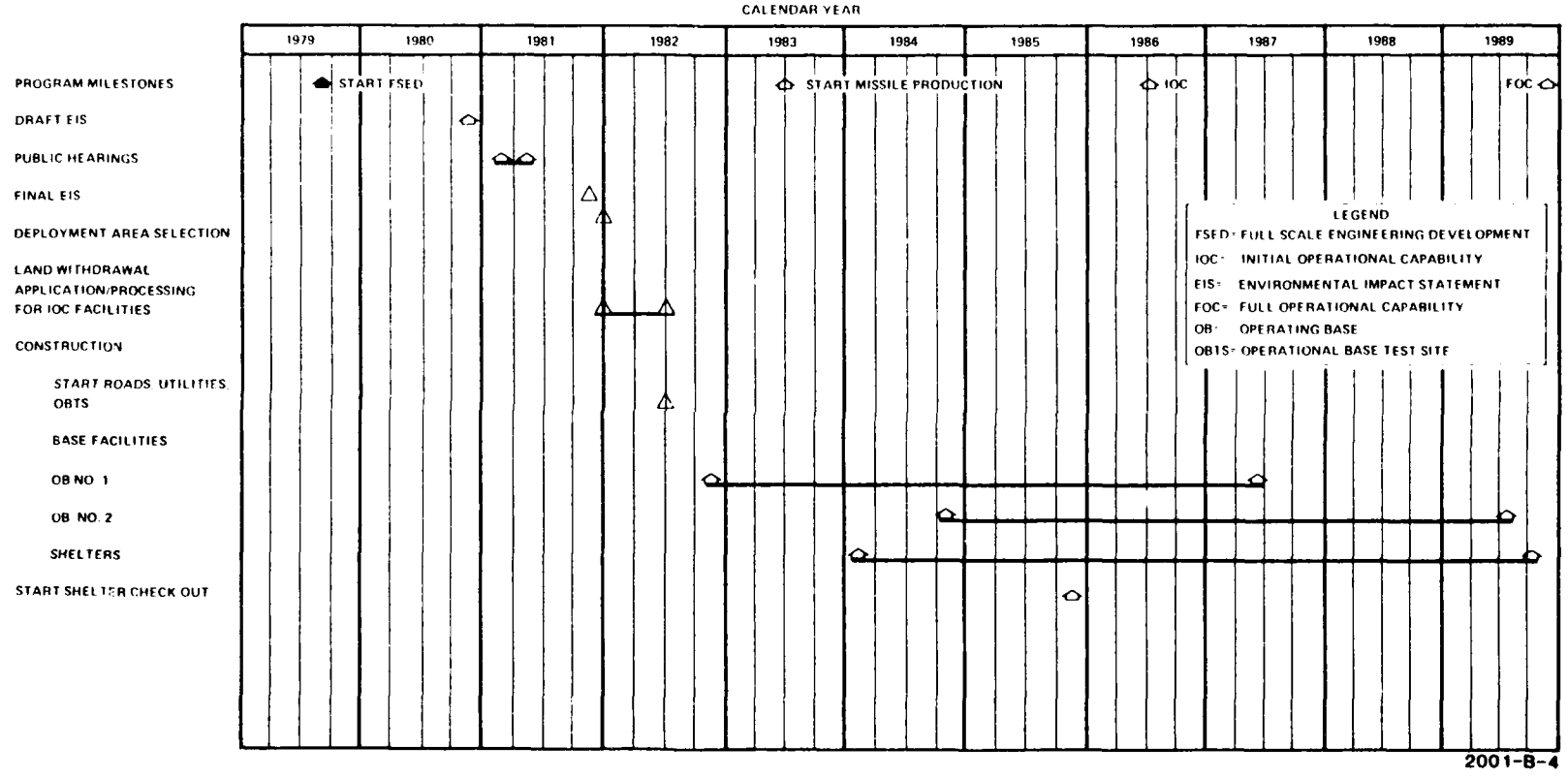


Figure 1.3-1. Major M-X program milestone schedule, 1979-1989.

warheads, this isn't effective in my point of view because you don't have anything until you have forty-six hundred shelters and we're not sure because there is no SALT II treaty: because of problems in Poland, Afghanistan, the Middle East, different areas that forty-six hundred shelters is going to be the end of it." (B0843-1-006).

The entire M-X system need not be deployed before its deterrent value is realized. Each portion of the system, as it is deployed, contributes to deterrence because it requires the adversary to expend more weapons than he can hope to destroy. In 1986, when 10 missiles with 100 reentry vehicles are deployed in 230 protective shelters, a potential adversary must contemplate using 230 and perhaps up to 460 weapons for the attack. His expenditure of 460 weapons to destroy 100 of ours is a ratio favorable to the United States and consequently enhances deterrence. Each portion of the system, as it is deployed, further enhances our ICBM deterrent capability because it continues to require the adversary to expend more weapons than he can hope to destroy. The Soviet Union would worsen its position by initiating an attack to say nothing of the devastating retaliation it would suffer from other surviving United States strategic forces. The deterrent capability of M-X steadily increases until it is maximized at full operational capability.

CONSTRUCTION (1.3.1)

This subsection provides an overview of the construction phase of the M-X project. Construction planning is essential to a project requiring that work be done over a long period of time and over a large, dispersed area.

The Army Corps of Engineers is responsible for planning and managing M-X construction. The details of several alternative construction scenarios are provided in Chapter 2 of the FEIS and in ETR-31, "Construction."

M-X construction is scheduled to last eight years and be dispersed over approximately 9,000 sq mi. Construction will be phased in an overlapping sequence of work spread among several construction (life support) camps. During the year of peak activity, approximately 24,000 people (construction workers and facility assembly and checkout personnel) will be working in the deployment area; construction camps will contain administrative offices and provide housing, dining, medical attention, shopping, and recreation, for construction workers.

The construction schedule (Figure 1.3-1) shows construction of support facilities, roads, and utilities at the first operating base starting in 1982 and continuing through 1987. To support this schedule, a railroad spur, railhead, and marshalling yard will be constructed in 1983 at a site convenient to base construction. Construction equipment and materials will be stored at marshalling yards and transshipped to construction sites as they are needed. The DTN and utilities will be constructed from the first operating base to the construction camp for the first group of shelters (and clusters) required to meet IOC by 1986. Construction of the second operating base will begin in late 1984 and continue through 1988.

Shelter construction will begin in 1984. The shelters will be constructed in groups of clusters with a construction camp for each group. Each camp will have a precast concrete plant, material source points, and water wells; some will also have

a marshalling yard. Before shelter construction begins, access roads must be built and power made available to each construction site. Portable generators will likely be used at first.

Construction is planned to start with DTN construction from the operating base to the first cluster area; then cluster roads and shelters would be built. While shelters are being built, work on roads to the next cluster would begin, and so on, until the entire project is completed in late 1989. Construction of the first cluster (CMF, cluster roads, and 23 shelters) would be complete by mid-1985, when the Air Force's assembly and checkout (A&CO) personnel would begin to install the necessary equipment to make the cluster operational (see Section 1.3.2).

When construction workers move to the next group of clusters, their camp will only be partly dismantled, so that it can be used by A&CO personnel. When A&CO is finished, the remainder of the construction camp will be removed. All remaining portable facilities are moved to new locations, the precast concrete plant dismantled, and the location restored and revegetated. After revegetation is complete the water wells developed to support construction will be available for beneficial use by other users, when such use is permissible within state water laws.

The lands used for construction camps (which will be vacated when the construction crew moves on) and for roads and facilities is estimated at between 4,600 and 6,800 acres (see Table 1.3.1-1). The materials estimated for construction of M-X are tabulated in Table 1.3.1-2. Table 1.3.1-3 estimates the totals both for land temporarily disturbed during construction and for land permanently withdrawn for M-X facilities. Table 1.3.1-4 shows land requirements for permanent road construction. Finally, Table 1.3.1-5 summarizes all land-use requirements estimated for the M-X project.

The analysis presented in the FEIS is for a precast construction technique, where shelter sections are precast at a central location and shipped to each shelter site where they are assembled. However, the Air Force is presently studying two other shelter construction techniques: 1) mechanized onsite cast-in-place and 2) conventional cast-in-place. Under the first two methods, precast and onsite cast-in-place, automated equipment could be used to construct the 4,600 identical shelters, trading higher equipment costs against lower manpower requirements and shorter onsite production times. Since less manpower would be required, temporary socioeconomic impacts would be reduced as compared with conventional methods. The precast and mechanized cast-in-place techniques are currently being tested for cost effectiveness and capability at the Nevada Test Site. These tests will be completed in 1982.

Although three construction techniques are being considered, the amount of aggregate, cement, and water required will be approximately the same whichever technique is chosen. Construction camp layouts and the sequence of work through the deployment area are also similar for the three techniques.

Construction plans, resources, and schedules for the Proposed Action and alternatives are described in detail in Chapter 2 and in ETR-31, "Construction."

Table 1.3.1-1. Land requirements for temporary construction facilities.[1]

Description	Number or Length in Miles	Unit Area	Total Area (acres)
Construction Camps	16-20	25 acres/each	400-500
Precast Concrete Plants	16-20	10 acres/each	160-200
Material Source Points[2]	100-125	10 acres/each	1,000-1,250
Water Wells	150-310	1 acre/each	150-310
Marshalling Yards	3-5	650 acres/each	1,950-3,250
Construction Roads[3]	250-350	3.6 acres/mile	900-1,300
Total			4,560-6,810

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[1]This provides a range for all deployment alternatives.

[2]Includes plants and quarries.

[3]Roads to material sources, 30-ft roadway, including shoulders.

Source: HDR Sciences calculation, 1981.

Table 1.3.1-2. Construction resources by alternative.[1]

Construction Resource	Alternative		
	P.A., 1-6	7	8
Disturbed Area[3] ($\times 10^3$ acres)	160-177	153-169	161-178
Water ($\times 10^3$ acre-ft)	86-186[2]	56-175[2]	71-184[2]
Aggregate[3] ($\times 10^3$ cu yd)	49,031-59,927	46,242-56,518	47,900-58,544
Steel[3] ($\times 10^3$ tons)	376-416	376-416	377-417
Cement[3] ($\times 10^3$ tons)	1,446-1,598	1,446-1,598	1,459-1,613
Fly Ash[3] ($\times 10^3$ tons)	307-339	307-339	324-358
Lumber[3] ($\times 10^3$ board-ft)	40,733-45,021	40,300-44,542	51,264-56,660
Asphaltic Oil[3] ($\times 10^3$ tons)	461-564	409-500	441-539
POL[4] ($\times 10^6$ gal)	459-561	334-408	354-432
Electrical Energy ($\times 10^3$ MWh)	3,226-3,942	2,322-2,838	3,171-3,875

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[1]Ranges of resources allow for possible design changes and/or construction overruns.

[2]Low number is with no revegetation; high number is with revegetation requiring 9 in. of water on 100,000 acres.

[3]Does not include temporary facilities.

[4]POL=petroleum, oil, and lubricant.

Source: HDR Sciences, 1981.

Table 1.3.1-3. Land requirements for facilities.

Facility	Number	Construction Phase		Operations Phase		
		Each (Acres)	Total (Acres)	Fenced Each (Acres)	Nonfenced (Acres)	Total (Acres)
Bases						
First Operating Base (OB)[1]	1	6,140	6,140	3,740	2,400	6,140
Second Operating Base (OB)[1]	1	4,240	4,240	2,740	1,500	4,240
Operational Base Test Site/Training Site (OBTS)[2]	1	250	250	30[8]	60	90
Designated Assembly Area (DAA)[3]	1	1,950	1,950	1,950	-	1,950
DDA						
Shelters	4,600	10	46,000	2.5	-	11,500
Cluster Maintenance Facilities (CMFs)	200	5.2	1,040	4.0	-	800[6]
Antennae	4,600	0.185	850	-	850	850
Area Support Centers (ASCs)	3-5	55	165-275	20	35	165-275
Remote Surveillance Sites (RSSs)[5]	200	0.35	70	0.25	-	50
Total			59,855-63,815			24,935-25,045[4,6]

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[1]Includes runway and clear zones.

[2]Located near first OB.

[3]Co-located at first OB; for split deployment there would be 2 DAAs (1 at each OB).

[4]For Proposed Action, which analyzes four ASCs, the total fenced land is 20,830 acres; total non-fenced land is 4,100.

[5]There is a study presently underway that could revise the need for RSSs, thereby reducing the land requirements.

[6]Total does not include area required for power distribution centers (up to 50 acres).

[7]RSSs no longer required. Still included in analysis.

[8]Does not include temporary withdrawal to 1 mi around two shelters (see Sec. 1.2.3.9).

Source: Department of the Air Force and HDR Sciences, 1981.

Table 1.3.1-4. Land requirements for roads.[5]

Description	Length (Miles)	Area Required During Construction[4] (Acres)	Permanently Required Right-of-Way (Acres)
Designated Transportation Network (DTN)[1]	1,260-1,460	15,300-17,700	11,500-13,300
Cluster Roads[2]	5,940-6,200	72,000-75,200	54,000-56,400
Support Roads[3]	1,320	8,000	8,000
Total	8,520-8,980	95,300-100,900	73,500-77,700

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[1]DTN is 24 ft wide with 5 ft shoulders; 100 ft construction right-of-way; 75 ft permanent right-of-way which may be exceeded in mountainous areas.

[2]Cluster roads are 21 or 27 ft wide with 5 ft shoulders, 100 ft construction right-of-way, 75 ft permanent right-of-way. A 150 ft temporary right-of-way measured each side of road centerline may be required if motorized counter-sensor vehicle is used (see Sec. 1.2.2.4).

[3]Support roads are 10 or 20 ft wide with 5ft shoulders, 50 ft construction and permanent rights-of-way.

[4]Same as disturbed area.

[5]Low range for full deployment, high range for split basing.

Source: Department of the Air Force and HDR Sciences, 1981.

Table 1.3.1-5. Summary of M-X system land requirements[1].

Description	Number or Length in Miles	Construction Phase (Acres)	Operations Phase (Acres) Fenced[2]	Operations Phase (Acres) Total
Permanent Facilities				
OB Complexes				
First OB	1	6,140	3,740	6,140
Second OB	1	4,240-6,140[3]	2,740-3,740[3]	4,240-6,140[3]
ObTS	1	250	30[8]	90
DAA	1-2[3]	1,950-3,900[3]	1,950-3,900[3]	1,950-3,900[3]
Subtotal (Withdraw)		12,380-16,430[3]	8,460-11,410[3]	12,420-16,270[3]
ODA				
Shelters	4,600	46,000	11,500	11,500
CMFs	200	1,040	800	800[9]
ASCs	3-5	165-275	60-100	165-275
RSSs[4]	200[4]	70[4]	50[4]	50[4]
Subtotal (Withdraw)		47,275-47,385	12,410-12,460	12,515-12,625
Total (Withdraw)		59,855-63,815	20,870-23,870	24,935-28,895
Roads and other Rights-of-Way				
DTN	1,260-1,460[5]	15,300-17,700	N/A[6]	11,500-13,300
Cluster Roads	5,940-6,200	72,000-75,200	N/A	54,000-56,400
Support Roads	1,320	8,000	N/A	8,000
Antennas	4,600	850	N/A	850
HSS Clear Zone	4,600[7]	--	--	--
Subtotal (ROW)		96,150-101,750	N/A	74,350-78,550
Total (Withdraw + ROW)		156-175,565	21,870-23,870	99,285-107,445
Temporary Facilities				
Construction Camps	16-20	400-500	N/A	N/A
Precast Concrete Plants	16-20	160-200	N/A	N/A
Material Source Points	100-125	1,000-1,250	N/Af	N/A
Water Wells	150-310	150-310	N/A	N/A
Marshalling Yards	3-5	1,950-3,250	N/A	N/A
Construction Roads	250-350[5]	900-1,300	N/A	N/A
Total Temporary Facilities		4,560-6,810	N/A	N/A
Grand Total		160,565-172,375	20,870-23,870	99,285-107,445

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[1]This table provides a range for all deployment alternatives.

[2]20,870 acres = 24.7 sq nmi (Proposed Action and Alternatives 1 through 7).

[3]High end of range reflects split deployment (Alternative 8).

[4]RSSs no longer required. Analysis still includes this information.

[5]Length in nautical miles. 1 nautical mile = 1.15 statute mile (mi).

[6]N/A = Not applicable.

[7]A 150 ft temporary right-of-way may be required around each HSS if motorized counter-sensor vehicle is used (see Sec. 1.2.2.4).

[8]Does not include temporary withdrawal to 1 mi radius around two shelters (see Sec. 1.2.3.9).

[9]Does not include area for power distribution centers (up to 50 acres).

Source: Department of the Air Force and HDR Sciences, 1981.

ASSEMBLY AND CHECKOUT (1.3.2)

This section describes the process of inspecting the newly constructed shelters and integrating the missile components to ensure the system functions as it should. This transition from construction to operations is called Assembly and Checkout (A&CO).

A&CO is accomplished for the Air Force by the Ballistic Missile Office (BMO) of the Air Force Systems Command; the operations are conducted by a team of Air Force and civilian personnel who make up the Site Activation Task Force (SATAF). The SATAF's principal function is to integrate missile components with newly constructed basing components (shelters and communications system) to determine (checkout) that the missile launcher fits properly within the shelter, that the system's software elements function properly, and that the missile and shelters can be monitored from the operational control center (OCC).

A&CO begins in the designated assembly area (DAA), where the missiles are assembled, and continues in the designated deployment area (DDA), where missile, launcher, transporter, and cluster elements are deployed. Missile, launcher, and transporter components will be shipped from the manufacturer to the DAA, where teams will assemble and check out each missile, canister, launcher, and transporter. This will take about a week for each missile/launcher. Once assembled, the missile/launcher is transported over the DTN on an A&CO launcher vehicle to the maintenance facility at its assigned cluster. The assembled transporter is also driven from the DAA to its assigned cluster over the DTN. Assurance that unauthorized missile/launchers are not deployed during A&CO and in the operations phase is provided through the following procedures:

- Observable shipment of Stage I boosters from the factory to the missile assembly area.
- Observable assembly of the missile/launcher and transporter at a DDA adjacent to, but physically separated from, other military facilities, and accessible only by one heavy duty road (the DTN).
- Movement of the missile/launcher between the assembly area and its cluster only along the DTN on a special, observable and identifiable vehicle.
- Blocking missile entry into the clusters by barriers across the access roads. Removal or replacement of barriers is observable.
- During the operations phase, periodic opening of observation ports in all facilities and vehicles capable of concealing a missile/launcher in the clusters, to verify that the proper number of missile/launchers are present.
- Once deployed in their assigned cluster, the transporter and missile/launcher will normally remain there except for major maintenance.

Checkout involves inspection to ensure that each shelter site is constructed in accordance with specification drawings, that the transporter properly docks at the shelter, and that the missile/launcher or simulator can be emplaced and linked with

the communications and power systems. Additionally, the radio, security, environmental control, and fiber-optic cable systems are all checked.

Once a group of clusters is checked out, the complete cluster complement of shelters, roads, transporters, missile launchers, simulators, CMFs, and communications is turned over to the Strategic Air Command (acceptance) and placed into operation. The A&CO turnover and acceptance of the first 10 missiles and cluster elements, defined as the initial operational capability (IOC), is scheduled to occur in 1986.

OPERATIONS (1.3.3)

Operations are defined as those activities necessary to maintain the system in a launch-ready configuration. These activities include monitoring system status, maintenance, security, and SAL verification. M-X operations are conducted in three locations: the Operating Bases (OBs), the Designated Assembly Area (DAA), and the Designated Deployment Area.

Very little activity is expected in the clusters. During the year, the launcher may be moved only three or four times for Strategic Arms Limitation (SALT) verifications and maintenance. Therefore, security patrols and road maintenance may be the only visible activity in a cluster for several months. Missile/launcher status is automatically sent to the operations control center via the fiber-optic network. Refer to Section 1.2.2.4 for additional information.

After SAL verifications, when observation ports have been closed, the transporter visits each of the 23 shelters in the cluster, placing the launcher into one of them. The remaining 22 shelters will contain simulators. Since the transporter actions are the same at each shelter, concealment is maintained. Contingency capabilities are available if it is suspected that concealment has somehow been compromised. For instance, a missile could be moved to a different shelter within its cluster in a short time. All 200 missiles could be relocated in their clusters in about 12 hours. Another option is to place some or all of the missiles into motion on the cluster roads, so that missiles could be moved rapidly to the nearest shelters on warning.

Some repairs can be made at the cluster maintenance facility by a team from the area support center. The transporter is used to retrieve the failed missile/launcher by visiting each of the shelters in the cluster. The repaired missile/launcher is returned to one of the shelters by the transporter upon completion of the necessary maintenance. Again the transporter visits each shelter and emplaces the missile in one of them.

If the failure is major, the missile must be returned to the DAA for repair. As described above, a team retrieves the missile/launcher and keeps it at the CMF. A canisterized missile vehicle is dispatched from the DAA to the cluster and the barrier is removed. The missile in its canister is removed from the launcher, transferred to the canisterized missile vehicle, and returned to the DAA. A replacement missile and canister are taken to the cluster and mated to the launcher at the cluster maintenance facility. The barrier is then reinstalled. The ports of the cluster maintenance facility, the transporter, and each of the 23 shelters in the cluster are then opened for two days to permit satellite monitoring for arms control verification. Following the two-day monitoring period, the ports are closed on all shelters and the missile/launcher is installed as previously described. The process, including monitoring, takes about seven days.

AD-A149 877 DEPLOYMENT AREA SELECTION AND LAND WITHDRAWAL/ACQUISITION CHAPTER 1 M-X/M.. (U) HENNINGSON DURHAM AND RICHARDSON SANTA BARBARA CA 02 OCT 81 2/2

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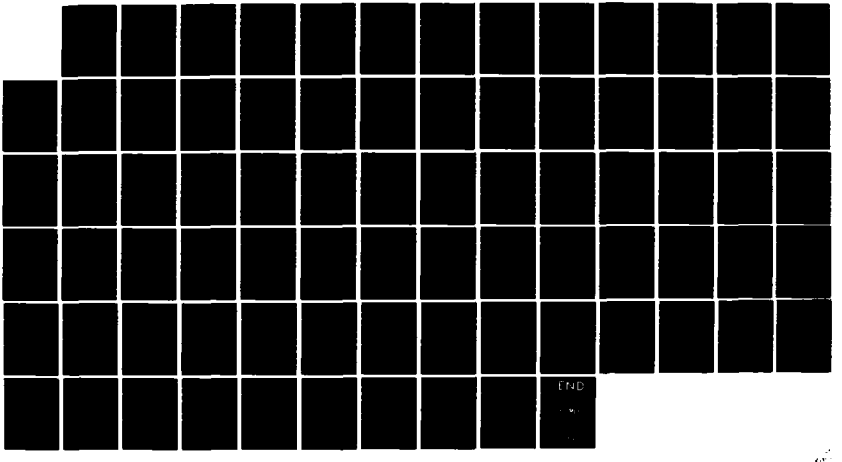

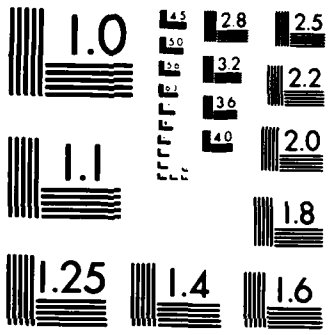

Deployment area facilities, such as power distribution centers, shelters, and roads will normally be maintained by teams dispatched from an area support center; some of these maintenance functions may be supported from the operating bases where it is feasible and economical to do so.

The M-X weapon system requires three levels of maintenance: organizational, intermediate, and depot. More highly skilled personnel and/or more complex equipment are required at each successive level. The least complex tasks (e.g., simple replacement of a known failed component) will generally be performed in the field by organizational maintenance personnel at the CMF. Intermediate level maintenance, which involves replacement/repair of large components (e.g., missile stages) or complicated fault isolation testing, will be performed at the DAA. Depot level maintenance, which requires repair skills or techniques beyond the capability of organizational or intermediate level maintenance, will be performed at Air Force Logistics Command installations and at selected contractor facilities.

Logistics Command depot and Air Force secure storage for Minuteman and Titan ICBM components are located at Hill AFB (Ogden, Utah), McClellan AFB (Sacramento, California), Kelly AFB (San Antonio, Texas), Tinker AFB (Oklahoma City, Oklahoma), Newark AFS (Newark, Ohio), Kirtland AFB (Albuquerque, New Mexico), and Robins AFB (Warner Robins, Georgia). These installations could be used for M-X support.

Security operations are controlled from area support centers. Mobile security patrol teams are located within the DDA at all times. If an alarm activates, a patrol team is sent to the location. Backup security forces are available at the area support center for transport by helicopter. Finally, any time a missile is transported over the DTN, escorts provide missile security and traffic control. The security system for M-X is described in more detail in Section 1.2.2.4.

Total operational manpower (which includes maintenance, security, operations, and support personnel) is about 13,000 people. Approximately 6,000 people are necessary to maintain missiles, facilities, aircraft, electronic equipment, and munitions, and to operate supply facilities. Over 2,000 additional people are needed for safety and security. Support personnel number about 5,000 and several hundred people staff and manage the system.

The Air Force will comply with congressional and DOD guidance requiring that military-essential tasks be performed by military personnel only. Those tasks defined as not being military-essential could be performed by government or contractor civilian employees. Civilian labor could comprise from 15 to 35 percent of the total M-X workforce according to present estimates.

There have been several public comments that suggest the M-X concept will not work.

PUBLIC COMMENT ON THE DRAFT EIS:

> "There are alternatives that can work, and would be far cheaper, both in actual money, and in social and environmental costs. At the very least, I demand a system that will work. Mobile deployment cannot work!!" (A0073-6-028)

The Air Force is confident that the current design will work, a confidence based on approximately 30 years of experience with ICBM development. Additionally, as full-scale engineering proceeds, refinements will probably be made to improve reliability, performance, and maintainability, and to minimize costs.

Other comments did not question whether the M-X basing concept would work, but expressed concern that SALT verification would be very difficult.

PUBLIC COMMENTS ON THE DRAFT EIS:

> "I wish to register my objections in the final EIS. My oppositions are as follows: M-X deployment would make arms limitation agreements almost impossible." (A0510-7-002).

> "The fact that such a weapon would defy verification would endanger the negotiations for arms limitation. The process of arms limitation must be pursued if we are to avoid nuclear war and the destruction of planet earth and its inhabitants." (A0485-2-002)

M-X in Multiple Protective Shelters as proposed and described in this FEIS is consistent with both SALT I and the draft SALT II. Both parties agreed to use National Technical Means (NTM) for verification and not to interfere with NTM verification by the other party. M-X will be verifiable with NTM by three means: (1) large missile components, such as Stage I, will be monitorable at the production facility; (2) the missiles and launchers assembled at the DAA will be easily observable; and (3) the number of deployed missiles and launchers will be verifiable by NTM through the opening viewports in the horizontal shelters, transporters, and cluster maintenance facilities.

DECOMMISSIONING (1.3.4)

M-X decommissioning would entail a variety of physical, socioeconomic, and environmental consequences. Several years would be required to establish realistic alternatives, plan for their implementation, conduct the required environmental reviews, and carry out the selected action. The Department of Defense, Air Force, state and local agencies, the public, and Congress will participate in the process. All actions would be in strict compliance with the laws applicable at the time, but since this could be 30 years or more in the future, it is impossible to predict exactly what requirements and procedures will apply.

It is not unreasonable to assume, however, that whatever legal requirements will apply to M-X, decommissioning will embody the essential provisions of current law on the matter. Presently, military base closure and realignment are controlled by 10 U.S.C. 2687. This law requires that, unless the President certifies that national security requires otherwise, no action with respect to the closure of or realignment of any military installation may be taken unless and until:

(1) the Secretary of Defense or the Secretary of the military department concerned publicly announces, and notifies the Committees on Armed

Services of the Senate and the House of Representatives in writing, that such military installation is a candidate for closure or realignment;

(2) the Secretary of Defense, or the Secretary of the military department concerned complies with the requirements of the National Environmental Policy Act of 1969 with respect to the proposed closure or realignment;

(3) the Secretary of Defense or the Secretary of the military department concerned submits to the Committees on Armed Services of the Senate and House of Representatives his final decision to carry out the proposed closure or realignment and a detailed justification for such decision, including statements of the estimated fiscal, local economic, budgetary, environmental, strategic, and operational consequences of the proposed closure or realignment; and

(4) a period of sixty days expires following the date on which the justification referred to in clause (3) has been submitted to such committees, during which period no irrevocable action may be taken to effect or implement the decision.

Under existing laws and regulations, when decommissioning, base closures, or major realignments are contemplated by the Air Force, analyses and decision documents are prepared for consideration by the Secretary of the Air Force and the Department of Defense. The analyses presented in these internal Air Force documents address operations and resources (considering costs and benefits), environmental factors, and potential impacts on the local economies under consideration. If review of the operations and resources studies shows that an installation should be closed, the Department of Defense would formally notify Congress of its intention to further analyze the proposed closure. This fulfills the first of the four requirements of 10 U.S.C. 2687.

Additionally, all terms, conditions, and requirements of the National Environmental Policy Act must be satisfied before Congress will authorize and fund the decommissioning action. This involves direct participation by federal, state, and local officials, and by the public and the Air Force during the environmental impact analysis. If an EIS is required, the procedure is similar to that followed for this EIS and includes scoping, preparation and distribution of a draft statement, a public comment period, and preparation and distribution of a final EIS responsive to agency and public concerns. The decisionmakers are required to consider the environmental consequences of the alternative actions and to prepare a public record of their decision. (See Section 1.10 for a description of the environmental impact analysis process.)

The third step required by current law is the submission of the final decision made by the Secretary of Defense or the Secretary of the Air Force, to the Committees on Armed Services of the House of Representatives and the Senate. The submission must include a detailed justification of the decision, together with an estimate of the fiscal, local, economic, budgetary, environmental, strategic, and operational consequences of the proposed closure or reduction.

Finally, under current law, a period of at least 60 days must elapse after formal congressional notification of the final decision to close or significantly reduce an installation before any irrevocable action may be undertaken.

No M-X decommissioning plans have been formulated yet. It is, therefore, impossible for such a plan to be addressed in detail in this FEIS. As noted above, a formal environmental analysis would presumably be required before any decommissioning decision is made (possibly 30 years hence). Any such decision, under current law, would include consideration of the opinions of federal, state, and local officials, Congress, the public, and the Air Force. Impact assistance for communities affected by changes in major defense programs, such as M-X decommissioning, are the responsibility of the President's Economic Adjustment Committee. See Section 1.11.2 for additional details on community planning and impact assistance.

Although details cannot be provided at this time, the following general actions would probably be taken. Those portions of M-X roads that have been put to various public uses over the lifetime of the system and may remain in service after the system is decommissioned. Disposition of the other facilities will depend on what uses are found for them at the time. If the Department of Defense could not make use of the facilities, they would be disposed of in accordance with the procedures in effect at that time.

If present law applies at the time of decommissioning, public lands withdrawn for M-X use for which no suitable use was found by the Department of Defense would be tendered to BLM for return to the public domain. If the character of the land has changed so that it is no longer suitable for public land management, it would be turned over to the General Services Administration for disposition. Private land acquired for M-X use for which no suitable use was found by the Department of Defense would be turned over to the General Services Administration for disposition.

To the extent desirable, feasible, and allowed by law, the Air Force would restore M-X areas to approximately their "as was" condition at the time of decommissioning. The effort to do so, however, would be influenced by the conditions prevailing at the time, which could differ substantially from those existing at present. For this reason, realistic decommissioning plans can only be formulated near the end of the system's useful life, with the involvement of federal, state, and local agencies and private citizens.

Several public comments have suggested that the useful life of M-X may be very short and that it may even be obsolete now.

PUBLIC COMMENTS ON THE DRAFT EIS:

"The M-X system is practically obsolete now. What are we going to do with a useless monstrosity and all the unemployed people when the project is terminated?" (A0568-5-006)

"This strategy is outdated before it is in place. I truly believe that those who gave us M-X decoy shell basing would have suggested buying

into the buggywhip industry 10 years after Henry Ford gave us the Model T." (B0709-4-004)

"Major criticisms include: that the system will be outdated shortly after it is operational and will merely invite a saturation attack without SALT and Soviet missile limitations." (A0590-9-013)

"It is the opinion of knowledgeable people that by the time this enormous proposed project would be installed it would be out of date and obsolete. We consider the project as proposed to be cumbersome, non-workable, too expensive and that proper study and judgment has not been exercised by those advocating the same." (B0650-9-003)

"My own personal feeling is that it will probably be outmoded before it's completed and the impact on this area would be a terrible waste of money and labor." (B0515-5-002)

"Furthermore, I don't believe we have any assurances that the shell game theory is fool proof and that the Soviets don't have the detection capability to determine the location of the missile in the complex." (B0338-2-001).

"It's silly to prepare a weapon that's going to be obsolete and then insist that it's going to be usable for 30 years. By the time you build it the Russians will have understood what it's about and created a new weapon or a new system of weapons to get around it. It's obvious that it's not going to do anything." (B0181-6-002)

The M-X system is not "practically obsolete now." The missile system uses the most advanced propulsion and guidance technology available anywhere in the world. This technology has been developed over many years and is sound and safe.

Because flexibility for future modernization is being designed into the missile system, it is not "dead ended." As with Minuteman, as improvements are developed they can be incorporated into the system (called upgrading). Therefore it is reasonable to believe that once M-X is deployed, it can remain operationally useful, through potential upgrading, for 30 years or more.

Keeping the missiles hidden from the Soviets is going to be difficult. But the argument that it is impossible ignores the fact that top U.S. scientists have assisted the Air Force in developing the Preservation of Location Uncertainty (PLU) program (or M-X decoy shell basing, in the words of the commentor), have reassured the Air Force that PLU will work, and have committed themselves to continue the PLU technology program through the life of the system.

Some public comments complained that the discussion of decommissioning was too short and that specific plans were not available now.

PUBLIC COMMENTS ON THE DRAFT EIS:

"'Developing plans later' is not a viable solution to this area of the proposed M-X system. Concrete data must be available to the decision-makers now for DEIS review." (B0165-9-564)

"The one-paragraph section on decommissioning is totally inadequate. In order for the state to plan for the 'bust that will eventually occur,' a great deal of information will be needed. The final usefulness of the system should be considered in its design. It is imperative that this be given a specific schedule and consideration NOW." (B0164-2-312)

The "Decommissioning" discussion, Section 1.3.4, has been revised to respond to these concerns.

Public Safety Considerations

1.4 PUBLIC SAFETY CONSIDERATIONS

The Department of Defense and the Air Force have formal safety programs covering operations, implemented by:

- o Directives and regulations establishing policy and procedures.
- o Specifications, manuals, and pamphlets providing detailed information on safety.
- o Reviews and inspections.
- o Training.
- o A mandatory reporting system for identification of safety-related problems.

Air Force Regulations and their related procedures implement existing law and Department of Defense Directives, and comply with U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) standards.

EXPLOSIVES SAFETY (1.4.1)

The M-X missile uses three solid-propellant rocket motors (Stages I, II, and III) and a liquid-propellant rocket engine (Stage IV) (see Figure 1.2.1-1.) The relatively small Stage III motor uses propellants that can detonate. The other stages use propellants that normally would not detonate, but would burn rapidly if ignited and can cause explosions through rupture of their containers.

The M-X propulsion system is similar to that of the Minuteman ICBM series, 1,000 of which are currently deployed. Minuteman, like M-X, uses three solid-propellant booster stages and a small liquid-propellant post-boost rocket engine. The solid propellants are rubber-like substances which burn when ignited by a high-temperature starting device. The liquid propellants ignite when mixed; however, they are stored in separate hermetically sealed containers filled at the factory, never opened in the field, and their contents are released only under

controlled (metered) conditions during actual flight. There have been no accidental ignitions of separate or assembled Minuteman stages during the project's entire history, and no leaks of the liquid fuels.

Accidents that have occurrred with liquid-fueled Titan missiles cannot be considered indicative of possible M-X accidents. Titan missiles use fuels similar to those in the Minuteman and M-X Stage IV; however, the very large fuel tanks of Titan are not hermetically sealed and the fuel must be transferred to and from the missile in the field. The presence of large quantities of liquid fuels and the need to transfer them have been eliminated in Minuteman and M-X missile design to increase safety and reliability and reduce maintenance requirements for the ICBM force.

Department of Defense Standard 5154.45 and Air Force Regulation 127-100 prescribe safety zones or required safe distances between places where explosives (including rocket propellants) are based, stored, or processed, and other specified locations such as inhabited buildings, public traffic routes, recreational areas, utilities, petroleum storage facilities, and storage or processing facilities for other explosives. The safety zone distances vary depending on the quantity and hazard-class of propellants involved. Moreover, when propellants of different classes are mated together, as is the case for M-X, the entire combination is required to be classified as an explosive if any one of them is explosive, rather than partially an explosive and partially a fire hazard.

Based on these requirements, safe distances to other facilities have been determined both for the complete M-X and its individual stages. Separate stages and complete missiles will be stored and handled at the designated assembly area, where the required distances among facilities will be ensured. To the extent feasible, exclusion zones related to explosives safety will be within the fence surrounding the designated assembly area. Where they are not, restrictive zones for nearby inhabited buildings and public traffic routes will be established.

Only 200 missiles will be deployed, but they could be located in any of the 4,600 protective shelters or 200 cluster maintenance facilities. Two safety distances are of particular interest in the deployment area, since they influence both siting and land use around each of these facilities. These are the safety distances from inhabited buildings and public traffic routes.

The safety requirements for inhabited buildings states that no part of an inhabited building* can be within 2,965 ft of a structure in which the entire M-X missile may be present. The safety requirement for public traffic routes states that no public traffic route** can lie within 1,780 ft of such a structure. Both these distances extend beyond the fence lines around the protective shelters and cluster maintenance facilities.

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*Inhabited buildings are all buildings, locations, or structures, other than explosives locations, used in whole or in part as a habitation or place of assembly--for example: schools, churches, homes, passenger terminals, shops, factories, hospitals, theaters, dining halls, and hangars.

**Public traffic routes are public highways, navigable streams, passenger railroads, and airfield facilities used by aircraft transporting passengers.

Protective shelters and cluster maintenance facilities will be sited to avoid existing (or rerouted) public traffic routes by at least the required 1,780 ft distance.

Although the cluster roads will be open to public use, they are not considered to be "public traffic routes" within the meaning of the regulations, so the 1,780 ft separation is not mandatory.

Under present regulations, protective shelters and cluster maintenance facilities cannot be constructed within 2,965 ft of an inhabited building. Where existing buildings interfere with siting, it may be necessary to acquire and remove them or to resite the M-X facilities.

The Air Force proposes to acquire the minimum amount of land necessary for facilities that must be fenced. Consequently, it does not intend to acquire all the land within the safety zone for inhabited buildings.

As discussed further in Section 1.8, major compatible activities within the unfenced portion of the safety zones include:

- Grazing
- Crop growing and harvesting, including crop dusting
- Prospecting for minerals
- Mining and mineral extraction of the type presently used in the deployment areas
- Oil and gas exploration and production-related crude oil processing equipment
- Drilling for and production of water
- Hunting, fishing, hiking, and off-road vehicle use (subject to applicable state and federal regulations)
- Temporary (overnight) camping, with tents or recreation vehicles (but no commercial or established public campgrounds).

On public and private lands, all protective shelters will be sited to avoid incompatible existing uses within the safety zones to the extent practical. Safety easements, or fee title, will be acquired as appropriate for private lands where incompatible present uses are not avoided or future incompatible uses are considered likely. On private land within the safety zones, proposed land uses will be considered on a case-by-case basis.

No public land will be withdrawn for safety zones. Instead, incompatible land uses will be restricted through a cooperative agreement between the Air Force and the Bureau of Land Management. The responsible DOD official will advise the land manager whether the proposed use is consistent with safety zone restrictions and a case-by-case decision will be made as necessary.

When it is determined that a proposed use (not discretionary with BLM) is incompatible with safety zone requirements, as a part of the case-by-case decisions, the Air Force will decide whether funds should be allocated to purchase the incompatible use and acquire the necessary land rights or whether the affected shelter(s) should be deactivated and/or replaced elsewhere in the deployment area.

NUCLEAR TRANSPORTATION AND SAFETY (1.4.2)

Nuclear weapons (or weapon components) will be moved when they are:

- Delivered to the designated assembly area (DAA) initially or returned to the Department of Energy. These movements will normally be via road or rail, or by Military Airlift Command (MAC) aircraft. Ground shipments must comply with Department of Transportation regulations. Military air shipments must comply with Department of Defense directives and Air Force regulations to minimize shipping hazards.

- Taken from or returned to storage at the DAA for assembly into reentry vehicles or deployment modules, or for surveillence or inspection; or when they are installed or removed from a missile. These movements require use of equipment meeting stringent design standards for nuclear handling.

- Transported between the DAA and a cluster maintenance facility when a missile is deployed or removed from service. These movements involve a completely assembled missile (and initially its launcher) on special transport vehicles and are confined to the designated transportation network (DTN). The special transport vehicles must meet design standards for nuclear safety (Air Force Regulation 122-10); they will move under armed escort and only during daylight hours. "Safe havens" along the DTN will provide lighted and fenced secure areas for overnight parking (usually at an area support center).

- Emplaced or removed from a protective shelter, or moved to or from the cluster maintenance facility during initial deployments, for maintenance or for SALT verification. These movements involve the assembled missile/launcher in the transporter, which must also be qualified to transport nuclear components. These movements will be made only during daylight hours and under armed escort.

All movements involving the missile will be monitored, and backup security forces can be dispatched from area support centers.

Nuclear safety involves both protection against accidents involving nuclear materials, and physical security against sabotage, vandalism, theft, or other deliberate hostile actions.

Physical Security Measures (1.4.2.1)

Because of the strategic importance of nuclear weapons and the need to ensure against their unauthorized use, a weapon storage facility must include not only security and armed guards, but also elaborate protective devices such as

fences, barriers, sensors, alarms, and lighting. Physical security is intended to prevent unauthorized access not only to the nuclear weapons, but also to the storage site.

Physical security within the DAA is provided by layers of protective methods including double fences; multiple perimeter and area alarm systems; armed onsite forces for patrol, alarm response, and backup; access monitors on the Assembly, Surveillence and Inspection building where weapons are processed, and on other critical buildings including the security control station; delay/denial systems on each weapons-storage facility; emergency power supplies; guard towers; and a positive system for personnel identification.

When nuclear weapons are in the designated deployment area, they would normally be in a protective shelter; otherwise, they would be under armed escort, as described previously. The shelters are equipped with both intrusion detectors and delay/denial systems to allow timely response by security forces to actual or suspected hostile activities; some will also have radar detection systems. The intrusion detection system is required to have a very high reliability.

Systems Hazards (1.4.2.2)

Weapon systems are designed to be as safe as possible, but hazards could possibly occur if prescribed maintenance practices are not followed or if there is unexpected equipment failure during handling, transportation, storage, maintenance, and strategic alert of missiles, propellants, and nuclear warheads. To minimize the hazard to military personnel and the public, an extensive safety program was begun at the start of M-X conceptual studies. This program not only applies existing safety criteria gained from past experience in weapons design, but also analyzes the M-X system and its components to identify new hazards. The hazards are then eliminated by design or controlled to an acceptable level.

What is an acceptable level? Air Force Regulation 122-10, the nuclear safety design criteria document, specifies quantitative requirements for an inadvertent programmed launch, an inadvertent nuclear detonation, and an accidental motor ignition that would result in movement of a warhead. "Fault trees," defining every reasonably conceivable mishap or malfunction that could lead to one of these events must be formulated, probabilities for each branch analyzed, and the total probability kept below an established level.

The probability of inadvertent programmed launch from hardware or software functioning or malfunctioning, normal human action, or error in manipulating controls or adjustments, or by any combination of these factors, must not exceed 1 in 10 trillion per missile per year. The probability of an inadvertent nuclear detonation (nuclear yield equivalent to more than 4 pounds of TNT) for normal environments must be less than 1 in one billion per weapon for the service life of the system. The probability of accidental ignition resulting in warhead movement must be less than 1 in 100 million per missile per year.

A single-point safing device will be provided for positive, physical interruption of ordnance power to each missile stage and its ground ordnance. This safing device will permit manual safing and locking, with a positive visual indication of a "safe" condition, but will not permit manual arming. The system must be armed by a

unique coded signal and can be disarmed remotely by another coded signal (i.e., it will not cycle from arm to disarm by the same signal). Armed or safe status will be remotely monitored. Environmental conditions critical to system safety (e.g., temperature) will also be monitored remotely, so that abnormal conditions can be detected and corrected rapidly.

Radiation and Toxic Substances

The normal exposure of weapons personnel to radiation has been measured and found to be well within established federal exposure standards. No hazard from intrinsic radiation exists for civilians or military personnel including those who are part of nuclear weapons operations.

Flammable and toxic substances may be used in the maintenance of weapons, but this is little different from many industrial operations. Proven procedures have been adopted to ensure both worker and public safety.

Accidents/Incidents

The environmental impact of a nuclear weapons accident is a legitimate concern. A significant nuclear yield (defined as one in excess of the equivalent of 4 pounds of TNT) resulting from either an accidental HE detonation or an increase in criticality is not a credible possibility. However, if a high explosive (HE) component of one or more weapons accidentally detonates, consequences would be from airblast, fragments, and dispersal of plutonium particles in the air, and not the results of a nuclear reaction.

Detonation of the HE in a group of stored nuclear weapons could have severe consequences. Airblast and fragments could cause casualties among the weapons personnel in the vicinity, but quantity-distance (Q-D) regulations for explosives would prevent "sympathetic," or chain reaction, detonations in other storage structures. The regulations also ensure that (1) casualties to civilians or military personnel not directly related to weapons operations would not be likely to be serious, and (2) any damage to facilities not related to the weapons would be slight. The area at risk is a function of the quantities of HE and plutonium in the weapons and thus varies by weapon type. The magnitude of the effects on human health and the radiological ground contamination from dispersal of plutonium by an HE detonation depends primarily on (1) the amount of plutonium dispersed, (2) the meteorological conditions, and (3) the numbers and locations of the people at risk.

An HE detonation could occur from (1) a deliberate or irrational act, (2) a man-caused accident, or (3) an act of nature. The likelihood of a deliberate or irrational act causing a nuclear weapon accident cannot reasonably be quantified. No such act is known to have ever been successful in causing a nuclear weapons accident or significant incident. If such an act were to be successful, the worst consequence would be an HE detonation.

Personnel Reliability Program (PRP)

All personnel assigned to nuclear weapons storage sites are evaluted under the criteria specified in the Personnel Reliability Program (PRP). This program is designed to ensure that personnel with unique military functions have no medical or

mental traits that are, or might be, a threat to the national security of the United States. The PRP is designed to ensure very high standards of individual reliability in those whose duties are associated with nuclear weapons and nuclear components. Only those who demonstrate unswerving loyalty, integrity, trustworthiness, and discretion are assigned such duties; candidates must meet all requirements of the PRP before they may perform duties associated with nuclear weapons. These requirements include position designation, security clearance, and screening. In addition, personnel are evaluated continuously over the entire period of their assignment to nuclear- weapons related work. The program promptly eliminates unqualified personnel from such positions.

Unauthorized Weapon Use

All modern U.S. nuclear weapons are designed against unauthorized use with features that preclude actual detonation with full nuclear yield without: (1) deliberate enabling actions and (2) the prescribed sequence for operation. For instance, a warhead must be properly mated to its missile, and must receive valid enabling "instructions.". The missile must be launched by more than one authorized operator, and the missile system must undergo the intended accelerations, decelerations, and time phasing during flight before the weapon can be armed and fired. Thus, unauthorized use is made extremely improbable.

Accident Control

Although an accident involving nuclear weapons is unlikely, contingency plans for Nuclear Accident and Incident Control (NAIC) are formulated and exercised frequently to ensure their currency. NAIC is designed to minimize injury, loss of life, and destruction of property resulting from an accident or incident. The command and control personnel in a storage area are responsible for conducting recurring training and exercises in NAIC to ensure a high state of readiness for command and control of any nuclear accident or incident until the on-scene commander arrives.

Maintenance Operations

The safety of maintenance operations performed on weapons and weapon components is most important. Sparks and static electricity are closely controlled. Flame-producing items such as matches or cigarette lighters are not permitted in the maintenance facility. Gasoline-powered handling equipment must have spark arrestors on the exhaust. Nonsparking tools are used in operations where a spark could possibly be a hazard. Shoes with conducting soles are worn to prevent static electricity buildup. Test and handling equipment are grounded when operations are performed on nuclear warheads. Fire extinguishers capable of use on electrical fires are available in several locations in every maintenance facility. The amount of explosives permitted in a maintenance facility is limited (this limit, plus any limits for individual bays within the facility, must be posted clearly). The amount of plutonium in the facility and internal bays is also limited. In addition, the bays where weapons are worked on normally have a personnel limit. This serves the dual purpose of minimizing personnel exposure and preventing the area from becoming too crowded for safe operations. These personnel limits vary with the size of the facility and the types of weapons serviced.

Quality Control Procedures

The Air Force developed quality control programs to help ensure that storage inspections, replacements of Limited Life Components (LLC), and mating/demating operations are performed correctly and completely. Highly trained and experienced persons, usually officers and senior noncommissioned officers, are selected for quality-control duties and report to the Commander, not the Maintenance Officer. Their function is to monitor maintenance operations, ensuring that technical procedures are conducted in strictest compliance with applicable technical publications.

Transport

Safety criteria for weapon-carrying vehicles are rigid. Forklifts, pallet jacks, slings, tow trucks, and other lifting devices are periodically load-tested and certified for handling nuclear weapons. Whenever maintenance is performed on them, they are retested to ensure their safety. Vehicles are inspected and certified each time they are to transport nuclear weapons. The inspection includes checking tires, oil and fuel, fire extinguishers, serviceability of tiedowns, the instrument panel, brakes, lights, etc. A completed DD Form 626, "Motor Vehicle Inspection (Transporting Hazardous Materials)," certifying that the inspection has been satisfactory, accompanies the vehicle while transporting nuclear weapons. The driver is also given a DD Form 836, "Special Instruction for Motor Vehicle Drivers," that describes his cargo and the procedures for fire. Vehicles that transport nuclear weapons into, out of, or within a storage area must be equipped with approved tiedown devices that are permanently affixed to the vehicles. Heavy-duty slings hooked to these tiedowns are used to secure the weapons in transit. Warning signs must be displayed on the front, rear, and each side of the vehicle at all times it is transporting nuclear weapons. Tranport vehicle and tow truck brakes must be set and wheels chocked during loading and unloading operations.

Nuclear Safety Certification (1.4.2.3)

Department of Defense (DOD) policy on protection of nuclear weapons against accidents has resulted in the Air Force Nuclear Safety Certification Program (AFR 122-3). It requires that all equipment used to deliver, move, transport, support, test, operate, or maintain nuclear weapons, plus software and technical procedures dealing with the above, must receive an engineering evaluation and nuclear safety certification before being used with nuclear weapons. The safety analysis for uncovering hazards includes all related equipment and is the basis for the independent engineering evaluation required for nuclear safety certification. This certification program assures that attention has been given to each element of the supporting equipment and should minimize the chance of accidents with the weapon system.

Nuclear Safety Reviews (1.4.2.4)

By DOD direction, an agency independent of the design agency (the Ballistic Missile Office) must conduct a nuclear safety review of the weapon system design at critical milestones. This agency, the Nuclear Weapon System Safety Group (NWSSG), will conduct three sequential studies to ensure that the design complies with the four DOD nuclear safety standards. These standards require that as a minimum there shall be positive measures to:

(1) Prevent any nuclear weapon involved in an accident or incident, or a jettisoned weapon, from producing a nuclear yield.

(2) Prevent deliberate prearming, arming, launching, firing, or releasing of any nuclear weapon, except upon execution of emergency war orders or when directed by competent authority.

(3) Prevent inadvertent prearming, arming, launching, firing, or releasing of any nuclear weapon.

(4) Ensure the adequate security of each nuclear weapon, pursuant to DOD Directive 5210.41.

In addition, the NWSSG has the responsibility and the authority, with approval from the Headquarters of the U.S. Air Force, to direct changes in the weapon system design if, in their opinion, existing nuclear safety criteria or the four nuclear safety standards have not been met.

The Phase One safety study for M-X will consist of an informal evaluation of the design to give as much nuclear safety guidance to the developer as possible. The developer will provide detailed briefings on the design. Prototype hardware will be examined if available.

The Phase Two safety study will formally evaluate the design and operational concept. The developer will again provide detailed briefings on the design. Preproduction hardware will be examined if available. The using command will prepare a draft Operational Plan Data Document and a briefing on it. A Technical Nuclear Safety Analysis will be prepared to support the NWSSG study. The NWSSG findings will be documented in a formal report approved by the Headquarters of the U.S. Air Force.

The preoperational safety study determines if the system design and operational procedures provide adequate nuclear safety. It also serves as the basis for developing proposed safety rules.

HAZARDOUS WASTES (1.4.3)

Construction and operation of the M-X system is not expected to generate large quantities of hazardous wastes. Potential sources of such wastes include expended or unusable oils and lubricants, solvents, paints and thinner, hydraulic and machining fluids, cleaning agents, and adhesives. To the extent that the types and quantities generated meet the EPA criteria for hazardous wastes, the formal handling and reporting requirements will be observed. In addition, the Department of Defense and the Air Force have established a comprehensive system for handling and disposal of hazardous wastes; this system is fully applicable to M-X and will be used.

The nuclear materials used in M-X warheads are not sources of hazardous wastes within the meaning of the Resource Conservation and Recovery Act. Wastes from such materials are handled and disposed of in accordance with regulations established by the Department of Energy and the Nuclear Regulatory Commission. None will be produced and stored at the operating bases or in the deployment area.

Weapons requiring replacement or major maintenance will be returned to a central facility dedicated to the purpose, near Amarillo, Texas.

Hazardous wastes generated during construction and operation of the M-X system must be handled and disposed of in accordance with the Resource Conservation and Recovery Act of 1976, as amended. Strict control of hazardous wastes is required from the time they are generated, through any intermediate storage or transportation, to final disposal. Regulations implementing the Act are issued and administered by the Environmental Protection Agency (EPA).

The Act defines hazardous waste as "a solid waste or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may--

- o cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating, reversible illness; or
- o pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed."

In broad terms, wastes are classified as hazardous if they are flammable, corrosive, highly chemically reactive or capable of generating toxic fumes, explosive, or inherently toxic. (Some wastes may exhibit more than one class of hazard.) Regulations establishing procedures for identifying hazardous wastes and listing specific hazardous wastes and substances have been published by the EPA (40 CFR 261).

For more detailed information on hazardous waste, refer to Chapter 4, Section 4.4.8.4.

Authorizing Actions

1.5 AUTHORIZING ACTIONS

After land is obtained (see Sections 1.6, 1.7, and 1.9) and before project construction begins, consultations, permits, and other compliance procedures must occur. Permits will be required under federal and state pollution control laws and state water appropriations laws. M-X deployment and operation is also subject to DOD and Air Force regulations. Finally, military construction funds must be obtained by Congressional authorization.

Permits that have been identified as being necessary for construction and operation of the M-X system are summarized in Tables 1.5-1 through 1.5-10.

The time required to obtain permits varies with each permit and can range from several weeks to several years. The lead times shown are estimates of the maximum time necessary to process a permit. In some cases, these maximum time limits are fixed by statute, but the authorizing agency has the discretion to shorten the time requirement. Often that agency has a statutorily fixed time period within which to review the application (generally 30 or 60 days) but if the original application is not satisfactory the review process may be repeated each time the application is resubmitted.

Table 1.5-1. Land-related authorizing actions (Page 1 of 2).

Project Feature	Permit	Authorizing Agency	Authority	Lead Time
Occupation, use or traversing of land for roads and railroads over wildlife refuges	Rights-of-Way Consultation	Fish and Wildlife Service (FWS), Department of Interior (DOI)	Fish and Wildlife Coordination Act, 16 U.S.C. 661 et seq., Section 4(f); Department of Transportation Act of 1966, 80 Stat. 931, P.L. 89-670; National Wildlife Refuge System Administration Act, P.L. 89-669	Not presently known
Occupation, use or traversing of land for power and communication distribution systems, pipelines	Rights-of-Way Consultation	FWS/DOI	Fish and Wildlife Coordination Act, 16 U.S.C. 661 et seq.; National Wildlife Refuge System Administration Act, P.L. 89-669	Not presently known
Occupation, use or traversing of land for roads, railroads, power, construction camps, storage yards, etc.	Right-of-Way Grant (BLM or Forest Service Lands)	Bureau of Land Management (BLM)/U.S. Forest Service	Federal Land Policy and Management Act (FLPMA), 43 U.S.C. 1701-1782	Approximately 1-3 months (Congressional action on land withdrawal is a prerequisite)
Same as above	Right-of-Way Grant (Utah state lands) (state officials have suggested that land tradeoffs may be arranged)	Utah Division of State Lands and Forestry	State of Utah Rules and Regulations Governing the Issuance of Rights-of-Way and Special Use Leases	Not presently known
Same as above	Utility or Access Permit (to cross or put a utility line across state highway property in Utah)	Utah Department of Transportation District Offices	Utah Code Ann., Sec. 72-12-133	Not presently known
Same as above	Right-of-Way Easements (Texas State Lands)	Governor of Texas, Texas Land Commissioner	Texas Civil Statutes, tit. 85, Arts. 5242, 5247	Not presently known
Same as above	Right-of-Way or Easement for military installations (County Lands in Texas)	County Judge, Commissioners Court (Texas)	Texas Civil Statutes, tit. 85, Art. 5248c-1	Not presently known
Same as above	Easement or other interest in land controlled by Texas Highway Department	State Highway Commissioner/ Governor	Texas Civil Statutes, tit. 85, Art. 5248d-1	Not presently known
Same as above	Right-of-Way (New Mexico State Lands)	New Mexico Commissioner of Public Lands	New Mexico Stat. Ann., Sec. 19-7-57	Not presently known
Same as above	Easement over private land obtained by negotiation and contracts with private parties	Private owners in Utah, Texas Texas and New Mexico	No statutory authority	Variable
Obtaining jurisdiction over, use of, or occupation of land for DDA, DAA, and OB facilities and structures	Withdrawal Land Order	BLM/USFS	FLPMA; Engle Act, 43 U.S.C. 155-158	Approximately one year (depending upon time for Congressional Action)

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Table 1.5-1. Land related authorizing actions (Page 2 of 2).

Project Feature	Permit	Authorizing Agency	Authority	Lead Time
Obtaining jurisdiction over, use of, or occupation of land for DDA, DAA, and OB facilities and structures	Formal state permit procedures for permanent use of state lands in Utah do not exist in a form comparable to federal land withdrawal; purchase negotiations are necessary	Utah Division of State Lands and Forestry	Utah Code Ann., Sec. 65-1-29	Not presently known
Same as above	Exchange of lands between division and proprietors (Utah state lands)	Utah Division of State Lands and Forestry	Utah Code Ann., Sec. 65-1-70	Not presently known
Same as above	Conveyance of interest in county land to U.S. for military installation	County Judge/Commissioners Court	Texas Civil Statutes, tit. 85, Art. 5248c-1	Not presently known
Same as above	Permits procedures comparable to the federal land withdrawal process do not exist in New Mexico; purchase negotiations are necessary	New Mexico Commissioner of Public Lands	New Mexico Stat. Ann., Sec. 19-7-12	Not presently known
Same as above	Exchange of lands between New Mexico and U.S. Department of Interior	New Mexico Commissioner of Public Lands	New Mexico Stat. Ann., Sec. 19-2-12	Not presently known
Same as above	No permit procedures comparable to federal land withdrawal exist for private lands; purchase negotiations are necessary	Private landowners in Utah, Texas, or New Mexico	None	Variable
Same as above <u>except</u> that Texas expressly reserves concurrent jurisdiction over land ceded to the U.S.	Permit procedures comparable to the federal land withdrawal process do not exist; purchase negotiations are necessary	Governor of Texas, Texas Land Commissioner	Texas Civil Statutes, tit. 85, Arts. 5245, 5247	Not presently known
Occupation, use or traversing of land to study, monitor or perform other investigations	Temporary Use Permit or Cooperative Agreement	BLM/USFS	FLPMA (see above), Secs. 103(f), 302(b), 501(a)(7), 504(a), and 507(a)	Approximately three months
Same as above	Special Use Lease	Utah Division of State Lands and Forestry	Regulations governing Special Use Leases on State Lands	Not presently known
Same as above	Lease (Texas State Lands)	Governor of Texas, Texas Land Commissioner	Texas Civil Statutes, tit. 85, Arts. 5242, 5247	Not presently known
Same as above	Lease (County Lands in Texas)	County Judge, Commissioner of Public Lands	Texas Civil Statutes, Ann., Sec. 19-5-7	Not presently known
Same as above	Easement (New Mexico State Lands)	New Mexico Commissioner of Public Lands	New Mexico Stat. Ann., Sec. 19-7-57	Not presently known
Same as above	Easement over private land obtained by negotiation and contracts with private parties	Private owners in Utah, Texas, and New Mexico	No statutory authority	Variable

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Table 1.5-2. Air related permits (Page 1 of 2).

Project Feature	Permit	Authorizing Agency	Authority	Lead Time
Major stationary sources including concrete batch plant, municipal incinerator, fossil-fuel fired equipment (heating and cooling, hot water), diesel generator, rock crusher, storage of volatile organic compounds (VOC) (fuels, solvents)	Permit (preconstruction) issued under Prevention of Significant Deterioration (PSD) or nonattainment regulations (federal permit not necessary for any states with EPA-approved PSD or nonattainment permit programs (PSD) approval pending Nevada/Utah)	Environmental Protection Agency (EPA) - Regions VIII, IX, and VI	Clean Air Act, 42 U.S.C., 7401 et seq.	180 days (after application is deemed complete by agency) plus up to one year monitoring for PSD permit (if regulations apply) unless application prior to 1 June 1981
Sources listed above with the following special requirements: o VOC storage: 40,000 gal. o Incinerators: 25 pounds/hour rated burning capacity o Air conditioning or fuel-burning equipment: 4 million Btu/hour heat input o Other sources: 23 pounds of emissions/hour	Registration Certificate/ Operating Permit	Nevada Department of Conservation and Natural Resources (AQ section)	Nevada Revised Stats., Sec. 445, et seq.; Nevada Air Quality Regulations, Arts. 3 and 13	180 days (after application is deemed complete by agency) plus up to one year monitoring
Sources listed in first entry except natural gas, LPG, or oil fired (#1 or #2 fuel oil) equipment with 1,000,000 BTU/hour heat input and fossil-fuel fired steam electric generators	Registration Certificate/ Operating Permit	Clark County Air Pollution Control District (APCD)	Clark County Air Pollution Control Regulations, Secs. 15 and 16	180 days (after application is deemed complete by agency) plus up to one year monitoring
Includes Indirect Source (ISR) for parking areas 600 cars and sources listed in first entry except: o Fossil-fuel burning equipment using natural gas, LPG or other gas distributed by Utah utilities o Oil fired comfort heating equipment 1,000,000 Btu/hour heat input	Notice of Intent to Construct /Order to Construct	Utah Air Conservation Committee	Utah Air Conservation Act, Utah Code Ann., Sec. 26-24.9; Utah Air Conservation Regulations, Part 3	180 days statutory (60-90 days average) after application is deemed complete by agency
Sources listed in first entry unless specifically exempted because of size and emissions controls (see small sources)	Permits to Construct/Operate	Texas Air Control Board	Texas Clean Air Act, Texas Stat. Ann., tit. 71, Art. 4477-5, Secs. 3.28	Two-four months average (may be a year or more if hearings are called for)
Sources listed in first entry if emissions without controls would exceed 10 pounds/hour or 25 tons/year	Permits to Construct	New Mexico Air Quality Bureau	New Mexico Air Quality Act, New Mexico Stat. Ann., Sec. 74-2, et seq.; New Mexico Air Quality Regulations, Sec. 702	30 days (after application is deemed complete by agency)

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Table 1.5-2. Air related permits (Page 2 of 2).

Project Feature	Permit	Authorizing Agency	Authority	Lead Time
Disturbance of 20 acres or more of land/topsoil	Registration Certificate/ Operating Permit	Nevada Department of Conservation and Natural Resources, AQ Section	Nevada Air Pollution Control Law, Nev. Rev. Stats. Sec. 445, et seq.; Nev. Air Quality Regulations, Art. 7.3.3	180 days (after application is deemed complete by agency)
Disturbance of 1/4 acre or more of land/topsoil	Permit to Disturb Topsoil	Clark County APCD (District Board of Health)	Clark County Air Pollution Control Regulations, Sec. 17	10 days (not including preparation of application)
Small sources and sources subject to PSD or nonattainment review (see first entry) but subject to new source operating standards, including: o Incinerators o Sewage treatment plants with incinerators o Fossil-fuel fired steam generators o Asphalt batch plants	New Source Review sections of CAA authorize states to regulate such sources through permits, but the federal agency will use New Source review to assure compliance with New Source emissions standards	State Air Quality Agencies (must be included in State Implementation Plan (SIP))	Clean Air Act, 42 U.S.C., Sec. 7410(a)(2)(D), 110(a)(4)	
New Source with emissions 23 pounds/hr	Registration Certificate/ Operating Permit	Nevada Department of Conservation and Natural Resources, Air Quality Section	Nevada Air Pollution Control Regulations, Art. 13.2	30 days (after application is deemed complete by agency)
Concrete batch plants, rock crushers and asphalt concrete plants that are exempted from first entry because of size and emissions controls	Registration and/or approval of emissions control	Texas Air Quality Board	Texas Air Control Board Regulations, Exemptions from Permit Procedures, #83, #86, #91, #92, #110, and #117	Approximately 30 days (more or less depending on work load) (after application is deemed complete by agency)
Sources emitting 2,000 pounds/year	Registration Certificate	New Mexico Air Quality Bureau	New Mexico Air Quality Control Regulations, Sec. 703	Three to five days after application is deemed complete by agency
Open burning for brush control (not allowed for construction wastes, etc.)	Approval	Nevada Department of Conservation and Natural Resources	Nevada Air Pollution Control Regulations, Art. 5.2.1	Variable and only given in Spring and Fall
Same as above, may include construction wastes, etc.	Permit	Utah Air Conservation Committee or, for burning on state lands, Utah Division of State Lands	Utah Air Conservation Regulations, Part 2.4	It is unlikely that permit will be issued for M-X
Same as above	Authorization to Burn	Texas Air Control Board	Texas Air Control Board Regulations, Sec. 131.03.01.002	Not presently known
Same as above	Permit	New Mexico Air Quality Bureau	New Mexico Air Quality Control Regulations Sec. 301(F)	Not presently known

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Table 1.5-3. Water related permits (Page 1 of 3).

Project Feature	Permit	Authorizing Agency	Authority	Lead Time
Water Appropriation--Surface Water	Permit to Appropriate Public Waters	Nevada State Engineer	Nevada Revised Stat. Sec. 533 et. seq.	One year (possibly longer if court appeal is necessary)
Same as above	Permit to Appropriate Water	Utah State Engineer	Utah Code Ann., Sec. 73-3-1	Four to nine months (up to two years if appealed in court)
Same as above	Permit to Appropriate State Water	Texas Water Rights Commission	Texas Water Code Ann., Sec. 5.021 et. seq.	Not presently known
Same as above	Permit	New Mexico State Engineer	New Mexico Stat. Ann., Sec. 72, et. seq.	30 days (unless a hearing is scheduled)
Water Appropriation--Groundwater and Wells	Permit	Nevada State Engineer	Nevada Rev. Stat., Sec. 534, et. seq.	180 days (longer if protected)
Same as above	Permit (same as for surface water)	Utah State Engineer	Utah Code Ann., Sec. 73-3-1	Four to nine months (up to two years if appealed in court)
Same as above	Permit (local)	Texas Water Conservation Districts	Texas Water Code Ann., tit. 4 Sec. 5.2 et. seq.	60 days
Same as above	Permit (same as for groundwater)	New Mexico State Engineer	New Mexico Stat. Ann., Sec. 75, et. seq.	30 days (unless a hearing is scheduled)
Well Sites	Right-of-Way Grant (ROW)	BLM/DOI	FLPMA, 43 U.S.C. 1767	No rights-of-way will be granted until Congress acts on land withdrawal
Well Sites	Consultations	FWS/DOI	National Wildlife Refuge System Administration Act, P.L. 89-669; Endangered Species Act, 16 U.S.C. 1531 et. seq.; Wilderness Act, P.L. 88-577. Sept. 4, 1964	Not presently known
Design and construction of wastewater treatment units including municipal wastewater treatment plants, industrial and commercial wastewater treatment units	Design and Construction Approval for Municipal and Industrial Wastewater Treatment Plants (submission of plans and specifications; included in NPDES permit process)	Nevada Department of Conservation and Natural Resources, Bureau of Consumer Health Protection Services	Nevada Water Pollution Control Law, Nevada Rev. Stat., Sec. 445 et. seq.	Four months
Same as above	Permit to Construct	Utah Division of Health, Water Pollution Committee	Utah Water Pollution Control Act, Utah Code Ann., Sec. 73-14, et. seq.	Four months
Same as above	Design and Construction Approval (submission of plans and specifications)	Texas Department of Health (public system) or Texas Department of Water Resources (private system)	Texas Water Quality Regulations, Sec. 156.16-001 & 002	Not presently known

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Table 1.5-3. Water related permits (Page 2 of 3).

Project Feature	Permit	Authorizing Agency	Authority	Lead Time
Design and construction of wastewater treatment units including municipal wastewater treatment plants, industrial and commercial wastewater treatment units	Approval of Plans for Sewage System Construction	New Mexico Water Quality Control Commission	New Mexico Water Quality Control Commission Regulations, Sec. 1-202	Not presently known
Design and construction of individual sewage disposal system (septic system)	Permit to Construct	Nevada Division of Health, Department of Human Resources	Nevada Water Pollution Control Law, Nevada Rev. Stat., Sec. 445, et. seq.	One to two months
Same as above	Permit to Construct	Clark County Health District	Clark County District Board of Health--Regulations Governing Individual Sewage Disposal Systems	One month
Same as above if system will serve ≤50 people	Permit to Construct	Utah Division of Health, Water Pollution Committee	Utah Water Pollution Control Act, Utah Code Ann., Sec. 73-14, et. seq.	One to two months
Same as above if system will serve ≤50 people	Permit to Construct	Central Utah District	Utah Water Pollution Control Act, Utah Code Ann., Sec. 73-14, et. seq.	Four weeks
Same as above	Permit to Construct	Beaver County Health Department	Utah Water Pollution Control Act, Utah Code Ann., Sec. 73-14, et. seq.	Four weeks
Same as above	Permit to Construct	Southwestern Utah District	Utah Water Pollution Control Act, Utah Code Ann., Sec. 73-14, et. seq.	Four weeks
Same as above	Licenses (if water quality is such that the state has ordered local agencies to issue licenses)	(but only if ordered by Director of Health Resources in Texas)	Ann., tit. 2, Sec. 26.039	Issue of whether discharge may injure public health
Same as above for system receiving ≥2,000 gallons/day	Liquid Waste System Permit	Regional offices of Environmental Improvement Division of New Mexico Health and Environment Department	New Mexico Liquid Waste Disposal Regulations, Sec.	Ten days after receipt of completed application
Design and construction of water supply treatment plant and distribution system	Permit to Construct	Nevada Division of Health, Department of Human Resources	Nevada Water Pollution Control Law, Nevada Rev. Stat. Sec. 445	60 days
Same as above	Permit to Construct	Clark County Health District	Nevada Water Pollution Control Law, Nevada Rev. Stat., Sec. 445	60 days
Same as above	Design Approval	Utah Division of Health, Safe Drinking Water Committee	Utah Water Pollution Control, Utah Code Sec. 26-36, et. seq.	60 days

Table 1.5-3. Water related permits (Page 3 of 3).

Project Feature	Permit	Authorizing Agency	Authority	Lead Time
Same as above for modification or construction > $2,000 in value (for systems serving 25-5,000 people)	Design Approval	Environmental Improvement Division of New Mexico Health and Environment Department	New Mexico Water Supply Regulations Sec. 103 (A)	Application 60 days prior to construction; approval within 30 days after receipt of complete
Discharge of pollutants into surface waters or into surface lagoons which could subsequently lead to contamination of surface and/or ground waters	NPDES Permit (administered for states of Utah, Texas and New Mexico)	Environmental Protection Agency Regions VIII and VI	Clean Water Act 33 U.S.C. 1251, et. seq.	Eight months to one year
Same as above, but includes underground discharges	NPDES Permit	Department Conservation and Natural Resources	Nevada Water Pollution Control Law, Nevada Rev. Stat., Sec. 445, et. seq.	Four to six months
Same as above	Discharge Permit	Utah Division of Health, Water Pollution Committee	Utah Water Pollution Control Act, Utah Code Ann., Sec. 73-14-15	Six months
Same as above	Discharge Permit	Texas Department of Water Resources	Texas Water Quality Rates, Sec. 156.15.05.001	Six months
Same as above	Notice of Intent to Construct/Discharge Plan Approval	New Mexico Water Pollution Control Bureau/New Mexico Environmental Improvement Division	New Mexico Water Quality Control Commission Regulations, Secs. 1-201, 3-104	Six to seven months
Injection of wastes into wells including hazardous wastes, industrial and domestic wastes, oil and gas recovery injection fluids, geothermal power extraction, radioactive wastes, storm drainage wells, etc.	Permit VI	Environmental Protection Agency--Regions VIII, IX, and	Safe Drinking Water Act 42 U.S.C. 300 et. seq.	Six months to one year
Same as above	Permit	Nevada Department of Conservation and Natural Resources	Nevada Rev. Stat., Sec. 445.287	Four to six months
Same as above	See above for state underground disposal permits			
Discharge of dredged material or fill material for purposes of building impoundments, causeways or roadfills, dams, dikes in navigable waters (including wetlands)	Permit/Consultation	District Engineer, Army Corps of Engineers; U.S. Coast Guard	Clean Water Act, Sec. 404, 33 U.S.C. 1344; Executive Orders 11988 and 11990	Six months
Storage and transport of hydrocarbons near navigable waters; spill prevention	Approval of Spill Prevention Control and Countermeasure (SPCC) Plan	Environmental Protection Agency, Regions VI, VIII, IX	Clean Water Act, Sec. 311(j)(1)(c); 40 C.F.R. 112	Not presently known
Monitoring groundwater resources	Special Use Permit	FWS/DOI	National Wildlife Refuge System Administration Act, P.L. 89-669	Not presently known
Building of a dam >10 ft. in height or storing >10 acre ft of water in New Mexico	Permit	New Mexico State Engineer	New Mexico Stat. Ann., Secs. 72, et. seq.	Two weeks

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Table 1.5-4. Solid and hazardous waste related permits (Page 1 of 2).

Project Feature	Permit	Authorizing Agency	Authority	Lead Time
Treatment, utilization, processing and disposal of solid wastes, including construction of sanitary landfills, salvage yards, incineration facilities	Design and Operation Approval	Nevada Division of Environmental Protection, Department of Conservation and Natural Resources	Nevada Solid Waste Disposal Law, Nevada Rev. Stat., Sec. 444, 440 et. seq.	30 to 60 days
Same as above	Design and Operation Approval	Clark County Health District	Clark County District Board of Health--Regulations Governing Solid Waste Disposal Sites and Facilities; Nevada Rev. Stat., Sec. 439.350, 439.410	30 days
Same as above	Design and Operation Approval	Utah Division of Health, Bureau Solid Waste Management	Utah Solid Waste Management Act, Utah Code Ann., Sec. 26-35-2, et. seq.	30 days
Same as above	Design and Operation Approval	Central Utah Health District	Utah Solid Waste Management Act, Utah Code Ann., Sec. 26-35-2, et. seq.	Two to three weeks
Same as above	Design and Operation Approval	Beaver County Health Department	Utah Solid Waste Management Act, Utah Code Ann., Sec. 26-35-2, et. seq.	Two to three weeks
Same as above	Design and Operation Approval	Southwestern Utah District	Utah Solid Waste Management Act, Utah Code Ann., Sec. 26-35-2, et. seq.	Two to three weeks
Same as above	Permit/License	Texas Department of Health Resources/County Agencies	Texas Solid Waste Disposal Act, Texas Stat. Ann., tit. 71, Art. 4477-7	Three to four months
Same as above, but for industrial solid wastes only	Permit to Store, Process or Dispose of Industrial Wastes (off-site only)	Texas Department of Water Resources or Texas Department of Health	Texas Industrial Solid Waste Management Regulations, Sec. 156.22.01.002; Texas Water Code Ann., Sec. 5.131, 5.132	Three to four months
Same as above	Registration Certificate	New Mexico Solid Waste Management Unit	New Mexico Hazardous Waste Act, New Mexico Stat. Ann., Sec. 24-1-3, et. seq., Solid Waste Management Regulations	Not presently known

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Table 1.5-4. Solid and hazardous waste related permits (Page 2 of 2).

Project Feature	Permit	Authorizing Agency	Authority	Lead Time
Storage of toxic substances, explosives, liquid propellants, petroleum oil, lubricants	Approval of QD Safety Plan for conceptual base design	Department of Defense Explosive Safety Board	Department of Defense Ammunition and Explosives Safety Standards, Directive 5143.43, Air Force Reg. 127-100	Six months
Same as above	Approval of facility-specific QD safety plans	Department of Defense Explosive Safety Board	Department of Defense Ammunition and Explosives Safety Standards, Directive 5143.43, Air Force Reg. 127-100	Six months to one year
Packaging, labeling, documenting, handling and transportation of hazardous materials on public roads, railways, etc., across state lines. Hazardous materials include radioactive materials, flammable liquids, combustible liquids, explosives, etc.	Registration	Department of Transportation	Hazardous Materials Transportation Act, 49 U.S.C. 1801 et. seq.	Six months to one year
Generation and/or transportation of hazardous wastes in quantities exceeding 1,000 Kg per month or 1 Kg per month for acute hazardous wastes	Hazardous Waste Identification Number	Environmental Protection Agency--Regions VIII and IX	Resource Conservation and Recovery Act, U.S.C. 6901 et. seq.	One year

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Table 1.5-5. Cultural and Native American resource protection permits (Page 1 of 2).

Project Feature	Permit	Authorizing Agency	Authority	Lead Time
Minimize impact of construction on Native American Religious Practices and Sites	Consultation	Native American Religious Leaders, Bureau of Indian Affairs, Department of Interior	Native American Religious Freedom Act, 42 U.S.C. Sec. 1996 et. seq.	Variable
Minimize impact of construction on cultural resources	Determination of No Adverse Effect/Programmatic Memorandum of Agreement/Avoidance and Mitigation (for land withdrawal where no excavations or removal of archaeological resources are anticipated)	Advisory Council on National Historic Preservation/State Historic Preservation Offices	National Historic Preservation Act, 16 U.S.C., 470 et. seq.; Executive Order 11593	Not presently known
Same as above	Permit to Excavate or to Remove or Alter Archaeological Resources	Federal Land Manager (BLM, Secretary of Interior, Secretary of Agriculture)	National Historic Preservation Act, 16 U.S.C. 470aa et. seq.	Not presently known
Same as above	Survey for recovery and preservation of archaeological resources discovered in the course of siting/notice	Secretary of Interior	Historic Sites, Buildings and Antiquities Act, 16 U.S.C., Secs. 471 et. seq. (at 469a-1)	Not presently known
Same as above	Cooperative Agreement for construction and operation on Historic Trails	Department of Interior, National Park Service	National Trails System Act, 16 U.S.C., Sec. 1241 et. seq.	Not presently known
Same as above	Work Permit (if archaeological artifacts are found in the process of siting in Nevada)	Nevada State Museum	Nevada Rev. Stat., Sec. 381.195	Not presently known
Same as above	Paleontological Permit (to disturb paleontological or archaeological resources on state lands in Utah)	Utah Division of State History	Utah Antiquities Act, Utah Code Ann. Sec. 63-18-25	Seven days after permit application is completed and subinitted
Same as above	Archaeological Survey Easement (for archaeological surveys on state Trust Land in New Mexico)	New Mexico State Land Office; State Archaeologist; Cultural Properties Review Committee	New Mexico Stat. Ann., Secs. 19-7-57, 18-6-5	30 days after receipt of complete application
Same as above	Easements over Public Lands in New Mexico (for archaeological surveys)	Commissioner of Public Lands; State Archaeologist; Cultural Properties Review Committee	New Mexico Stat. Ann., Secs. 19-7-57, 18-6-5	30 days after receipt of complete application

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Table 1.5-5. Cultural and Native American resource protection permits (Page 2 of 2).

Project Feature	Permit	Authorizing Agency	Authority	Lead Time
Minimize impact of construction on cultural resources	Permit to excavate archaeological sites on State Trust Lands in New Mexico	New Mexico Cultural Properties Review Committee; State Archaeologist; Commissioner of Public Lands	New Mexico Cultural Properties Act, New Mexico Stat. Ann., Secs. 18-6-5(O), 18-6-9	90 days after complete application is received
Same as above	Permit to excavate archaeological sites on State Lands in New Mexico	New Mexico Cultural Properties Review Committee; State Archaeologist; Commissioner of Public Lands	New Mexico Cultural Properties Act, New Mexico Stat. Ann., Secs. 18-6-5(O), 18-6-9	90 days after complete application is received
Same as above	Permit to excavate archaeological sites on private lands in New Mexico (using mechanized equipment)	Private owner; New Mexico Cultural Properties Review Committee	New Mexico Cultural Properties Act, New Mexico Stat. Ann., Secs. 18-6-11	Approximately two weeks after submitting complete application including permission of owner

Table 1.5-6. Land use approvals.

Project Feature	Permit	Authorizing Agency	Authority	Lead Time
Assure compliance with local plans for use and development of land (for residential, gravel pits, transmission lines, etc.)	Zoning changes if needed, development of Planned Unit Development (PUD) zones for residential or other areas	Beaver County Commissioners (Utah)	Beaver County Zoning Ordinance	Not presently known
Same as above	Zoning variances for power line transmission	Beaver County Commissioners (Utah)	Beaver County Zoning Ordinance	Not presently known
Same as above	Zoning variances for power line transmission	Clark County Commissioners (Nevada)	Clark County Zoning Ordinance	Not presently known
Same as above	Development and approval of new zoning programs including PUDs and variances	County and city legislative agencies in Nevada, Utah, Texas, and New Mexico	Local and state ordinances	Variable

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Table 1.5-7. FAA construction permits.

Project Feature	Permit	Authorizing Agency	Authority	Lead Time
Airfield Construction	Notice of Intent (necessary for civil or joint use only)	Federal Aviation Administration (FAA)	Federal Aviation Act, 49 U.S.C. 13 et. seq.	90 days (after consultation with other military, state and local officials to develop and airspace use plan that is compatible with present uses; this is estimated to take six months)
Buildings, towers or other structures greater than 200 ft in height	Air Space Permit	FAA	Federal Aviation Act, 49 U.S.C. 1347 et. seq.	30 days

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Table 1.5-8. Construction materials permits.

Project Feature	Permit	Authorizing Agency	Authority	Lead Time
Acquire and use common varieties of sand, stone, gravel, etc. for a public project	Free Use Permit	BLM/DOE	Materials Act 1947, 30 U.S.C. 601-604 (43 CFR 3600 et. seq.)	Two to three weeks
Same as above	No state and local permits have been discovered that are comparable to Free Use Permits. Purchase negotiations will be necessary	State and county agencies, private landowners	No statutory authority	Variable

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Table 1.5-9. Biological opinion permits.

Project Feature	Permit	Authorizing Agency	Authority	Lead Time
Construction/operation Activities on flora and fauna	Obtain Biological Opinion on threatened and endangered species	DOI, Fish and Wildlife Service	Endangered Species Act (ESA) 16 U.S.C. 1531 et. seq., FLPMA	Ten months (maximum) may be extended by mutual agreement
Same as above	Permit to alter the Natural Spring Channel (for streams and used for fishing in Utah)	Utah Division of Water Rights	Utah Code Ann., Sec. 73-3-29	Not presently known
Same as above	Review of activities planned for land owned by Utah Wildlife Board (for Right-of-Way, a letter to the Board is sufficient)	Utah Wildlife Resources Board	Utah Code Ann., Sec. 73-3-29	Four to six weeks (must wait for monthly meeting of Board)
Construction activities within BLM-State Wildlife Agency, Wildlife Habitat Areas	Consultation	BLM	Sikes Act, P.L. 93-452 (16 U.S.C., 679 et. seq.)	Not presently known
Construction activities on Wetland/Riparian Habitats	Consultation	BLM	Executive Order 11990, Federal Register 26961, May 24, 1977	Not presently known
Introducing or relocating bird species (mitigations)	Consultation	FWS/DOI	Lacey Act of 1900 as amended, 16 U.S.C. 701	Not presently known
Impacts to bald eagles	Consultation	FWS/DOI	Bald Eagle Act of 1940, as amended, 16 U.S.C. 688-688d	Not presently known

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Table 1.5-10. Energy related permits.

Project Feature	Permit	Authorizing Agency	Authority	Lead Time
Geothermal Energy Appropriation	Appropriation Permit	Nevada State Engineer	Nevada Rev. Stat., Sec. 533 et. seq.	One year (possibly longer if judicial appeal is necessary)
Initiating Public Utility Service	Certificate of Public Convenience and Necessity	Nevada Public Utilities Commission	Nevada Rev. Stat., Sec. 704.330	Not presently known

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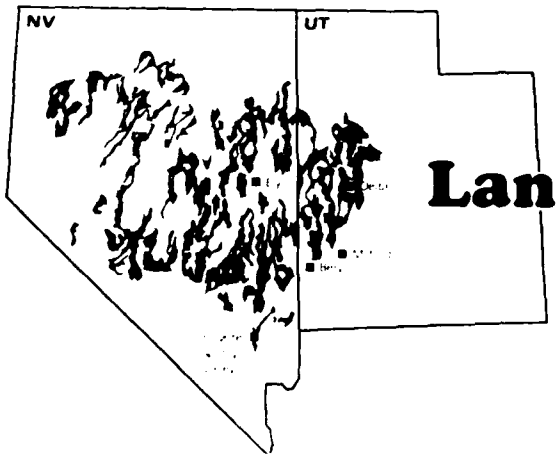


Land Withdrawal

1.6 LAND WITHDRAWAL

The Proposed Action and Alternatives 1 through 6 will require public land presently managed by the Bureau of Land Management (BLM), Department of the Interior (DOI). After the President selects a designated deployment area (DDA) and two operating base (OB) suitability zones, the Air Force will proceed with actions to withdraw the required public lands. The principal laws applicable to land withdrawal are the Federal Land Policy and Management Act of 1976 (FLPMA) (43 U.S.C. 1701 et seq.) and the Engle Act (43 U.S.C. 155 et seq.). The Engle Act requires an Act of Congress to withdraw more than 5,000 total acres for any one project planned by the Department of Defense.

During M-X deployment, as more facilities are constructed, there will be a gradual increase in the area exclusively used by the Air Force. Of the 25 to 29 thousand acres to be withdrawn, 24,000 acres is the maximum to be fenced at any given time and is not expected to be reached before full operational capability in December 1989. The range of withdrawn areas depends upon the alternative selected. See Table 1.3.1-5 for additional details.

The land required to be fenced for M-X ranges from 21,000 acres for the Proposed Action to 24,000 acres for split-basing. The Air Force will minimize the amount of land areas it withdraws for its exclusive use and control and maximize multiple use of the remaining public land within the deployment area. Section 1.8 discusses multiple land use.

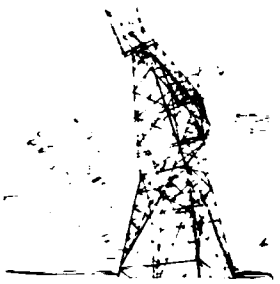
The Air Force will submit its application to withdraw all the public land required to fully deploy the missile system to the Bureau of Land Management. In accordance with FLPMA and the Engle Act, the withdrawal application will include a description of the required lands based on site-specific surveys of the lands required for initial operational capability (IOC) and a general description of all other land requirements based on information from tentative site locations plotted on maps with appropriate scales. The affected State Directors of BLM will evaluate the withdrawal application and provide recommendations to the Director of BLM in accordance with 43 CFR 2300. The Director will submit his recommendations to the Secretary of the Interior. A notice of the filing of an application will be published in the Federal Register within 30 days of receipt of the withdrawal application by

BLM. The notice will identify which public lands the Air Force has requested for withdrawal. At the time the application is filed these public lands may be segregated from settlement, sale, location, or entry under the public land laws, including the general mining and mineral leasing laws, until final action on the withdrawal application is taken. Segregation of the land cannot exceed two years. The withdrawal application does not authorize use of any public land by the Air Force before the necessary legislation is enacted and use is authorized by BLM. All leases, permits, and other existing uses authorized by the BLM will continue in effect during the period of segregation. Upon notice in the Federal Register, the withdrawal application will be available for public comment. At the completion of the public comment period, BLM will prepare required reports with recommendations and forward the application through the Director, BLM, to the Secretary of the Interior. The Secretary will submit the application and the withdrawal legislation through the Office of Management and Budget to Congress. A land-use management plan for withdrawn lands and other public land within the deployment area(s) will accompany to the proposed legislation.

The proposed legislation, if enacted, would withdraw public land required for the system. The legislation would also authorize sequential releases of withdrawn land by DOI for the balance of the project as site-specific field analysis is completed (tiered decision). The proposed legislation will acknowledge that the withdrawal will be subject to change after detailed site-specific surveys are completed. This enabling legislation will grant DOI the authority to alter site locations within the suitability zones described in the EIS. It is also intended to authorize the Secretary of Interior to issue public land orders immediately for IOC land requirements. The balance of the land would be released incrementally, as it is identified, during tiered decisionmaking, described in Section 1.10.2. This withdrawal legislation would define the process to be used to identify and withdraw subsequent parcels of public land together with the terms and conditions necessary to implement the M-X project.

Following enactment of the necessary legislation, the Secretary of Interior will issue incremental public land orders, defined during the tiering process, to support the construction schedule.

The Air Force is also pursuing, with the assistance of the Secretary of Interior, the possibility of proposing procedural legislation for M-X land withdrawals separate and apart from a withdrawal application. This is an alternative to the above process and may be required to satisfy Engle Act requirements and obtain land in a timely manner. This proposal would permit the Congress to consider legislation concurrent with processing of the land withdrawal application. It would grant BLM (under the authority of DOI) immediate authority to issue land orders for the withdrawal of land within the suitability zones identified in the EIS. Land would be withdrawn incrementally based on actual site surveys subject to tiering review (Section 1.10.2).

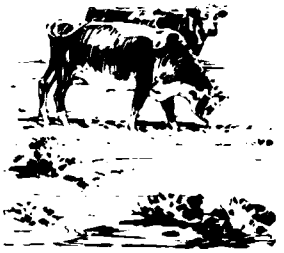


Rights of Way

1.7 RIGHTS OF WAY

In addition to the public land withdrawn for exclusive Air Force use, approximately 74,000 to 79,000 acres of public land will be required for rights-of-way (see Figure 1.3.1-5). Permanent rights-of-way are required for wells, roads, utilities, and communication lines; temporary rights-of-way for construction camps, road construction, storage areas, and other temporary uses supporting project construction; and free use permits for material sites. Small portions of rights-of-way, such as power substations, may be fenced. To the extent practical, the Air Force will locate roads, communication lines, and utilities within the same right-of-way corridor. All system rights-of-way will be identified and shown on maps filed at the same time the land withdrawal application is filed with BLM. Rights-of-way will be granted by BLM for IOC when the withdrawal is approved by Congress. Subsequent rights-of-way will be granted as they are located and evaluated in the decision tier of that portion of the system to which they are linked. (Section 1.10.2 describes tiering.) The sites will be analyzed to mitigate adverse environmental impacts and for practical construction considerations. The use authorizations will be granted by the appropriate state offices of the Bureau of Land Management using existing procedures. Use authorizations will be granted only after enactment of the withdrawal legislation described in Section 1.6.

Rights-of-way will also be required to provide rail, power, and motor vehicle access between M-X bases and existing railroads, power lines, and highways. These rights-of-way may be new or modifications to existing ones. Since design has not proceeded to the point where a source can be selected, it is possible that these rights-of-way may be partially sited outside the Tier I siting area (see Section 1.10.2). Some of these rights-of-way may be obtained by power companies or states for power and defense activities.



Multiple Land Use

1.8 MULTIPLE LAND USE

The Air Force is committed to minimize the amount of land required for M-X use and to accommodate multiple use of public lands adjacent to M-X facilities. Consequently, use of the public lands surrounding M-X facilities will continue under the managment of BLM. Even within selected withdrawn areas, there may be public uses consistent with M-X requirements. For example, the air field will be available for public use, and grazing and some types of agriculture may be compatible uses in the airfield approach and clear zones.

Table 1.8-1 summarizes the major compatible public uses on lands surrounding each M-X facility. A review of Table 1.8-1 shows that the limitations do not preclude any single public use; instead, some public uses will be limited. The limitations result from application of the safety requirements of Air Force Regulation 127-100 as discussed in Section 1.4, preservation of location uncertainty (PLU) as described in Section 1.2.2.2, or other engineering requirements. These limitations are applied to the location of inhabited buildings, power lines, public traffic routes, and the use of explosives and sensors. Traditional uses of public lands surrounding M-X facilities will, for the most part, continue.

Table 1.8-1 applies to the operational (steady-state) phase. Additional limitations may be required during the construction phase for safety, or to avoid interference with construction activities or engineering tests. Generally, public uses may be limited on particular areas from the start of construction until revegetation has been completed. All construction work will be confined within the withdrawn areas and the rights-of-way granted to the Air Force. The public will be restricted from the road rights-of-way during construction, except for established crossings. Construction support areas, such as borrow pits, mobilization yards, and life support facilities, may be fenced for safety and equipment security. Except for restrictions in selected areas during construction, no differences exist between operation and construction phases.

The following paragraphs amplify the provisions of selected portions of Table 1.8-1.

Table 1.8-1. Public uses surrounding M-X facilities (Page 1 of 4).

Public Uses	Horizontal Shelter Site (HSS)	CMF	ASC	Roads
Mining (Locatable)	BLM practices to prevail up to withdrawn boundary. No activities within withdrawn area. May be deactivated if major resources determined to be significant.	Same as for HSS.	BLM practices to prevail up to withdrawn boundary. No activities within withdrawn area.	BLM practices to prevail within AF ROW and the roadway will be available for use on a non-interference basis.
Mining (Leaseable)	BLM practices to prevail up to withdrawn boundary. No activities within withdrawn area. Activities within AF ROW may be restricted during transporter movements.	Same as for HSS.	BLM practices to prevail up to withdrawn boundary. No activities within withdrawn area.	BLM practices to prevail within AF ROW and the roadway will be available for use on a non-interference basis.
Mining (Saleable)	BLM practices to prevail up to withdrawn boundary. No activities within withdrawn area. Activities within AF ROW may be restricted during transporter movements.	Same as for HSS.	BLM practices to prevail up to withdrawn boundary. No activities within withdrawn area.	BLM practices to prevail within AF ROW and the roadway will be available for use on a non-interference basis.
Agriculture	BLM practices to prevail up to withdrawn boundary. No activities within withdrawn area. 30 ft from fence restricted to 8 in. high. Activities within AF ROW must not interfere with buried antenna or utilities.	Same as for HSS.	BLM practices to prevail up to withdrawn boundary. No activities within withdrawn area. 30 ft from fence restricted to 8 in. high.	BLM practices to prevail within AF ROW and the roadway will be available for use on a non-interference basis. Activities within AF ROW must not interfere with buried antenna or utilities.
Grazing	BLM practices to prevail up to withdrawn boundary. No activities within withdrawn area. Activities within AF ROW may be restricted during transporter movements.	Same as for HSS.	BLM practices to prevail up to withdrawn boundary. No activities within withdrawn area.	BLM practices to prevail within AF ROW and the roadway will be available for use on a non-interference basis.
Electric Utilities	BLM practices to prevail except following separation distances apply: Power Lines: greater than 250kV = 2,500 ft. 50-250kV = 1,250 ft Less than 50kV = 750 ft.	Same as for ASC.	BLM practices to prevail except following separation distances apply: Power Lines: greater than 45kV = 5,000 ft. Less than 45kV = 1,000 ft. Major power generation 5 statute mi.	Proposals for use of AF ROW will be evaluated and recommendations will be forwarded to Department of Interior.
Pipelines	BLM practices to prevail except following separation distances apply: Not allowed within 1,800 ft. Where practical, should exceed 2,965 ft.	Same as for HSS.	Same as for HSS.	Proposals for use of AF ROW will be evaluated and recommendations will be forwarded to Department of Interior.
Habitable Buildings	Allowed no closer than 2,965 ft.	Same as for HSS.	Allowed no closer than 2,965 ft from Missile Safe Haven.	Not allowed.
Roads (Public Traffic Routes)	Allowed no closer than 1,780 ft.	Same as for HSS.	Allowed no closer than 1,780 ft from Missile Safe Haven.	All M-X roads will be available for use as a transportation link by general public on non-interference basis.

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Table 1.3-... Public Uses Surrounding MX Facilities (Page 2 of 4).

OB	OAA	OBTS	Airfield	Heliport
BLM practices to prevail up to withdrawn boundary. No activities within withdrawn area.	Same as for OB.	BLM practices to prevail up to withdrawn boundary. No activities within withdrawn area. Mining activities within 2.5 mi of OBTS may be periodically restricted during testing.	Runways and Taxiways: No mining activities. Clear Zone: BLM practices to prevail underground, no structures or explosives. Approach Zone: BLM practices to prevail, but no explosives and structure height limited.	Same as Airfield.
BLM practices to prevail up to withdrawn boundary. Limited uses may be approved on non-interference basis.	BLM practices to prevail up to withdrawn boundary. No activities within withdrawn area.	Same as for Mining Locatable.	Same as for Mining Locatable.	Same as Airfield.
BLM practices to prevail up to withdrawn boundary. Limited uses may be approved on non-interference basis.	BLM practices to prevail up to withdrawn boundary. No activities within withdrawn area.	Same as for Mining Locatable.	Same as for Mining Locatable.	Same as Airfield.
Limited uses may be approved on non-interference basis.	BLM practices to prevail up to withdrawn boundary. No activities within withdrawn area. 30 ft from fence restricted to 8 in. high.	BLM practices to prevail up to withdrawn boundary. No activities within withdrawn area. Activities within 2.5 mi of OBTS may be periodically restricted during testing.	Runways and Taxiways: Not allowed. Clear Zone: Restricted to crops that do not attract birds. Approach Zone: BLM practices to prevail, but structure height restriction.	Pad: Not allowed. Approach Zone: BLM practices to prevail, but structure height restriction.
Limited uses may be approved on non-interference basis.	BLM practices to prevail up to withdrawn boundary. No activities within withdrawn area.	BLM practices to prevail up to withdrawn boundary. No activities within withdrawn area. Activities within 2.5 mi of OBTS may be periodically restricted during testing.	Runways and Taxiways: Not allowed. Clear Zone and Approach Zone: FAA and BLM practices to prevail.	Same as for Airfield.
BLM practices to prevail except following separation distances apply: Power Lines: greater than 45kV = 5,000 ft. Less than 45kV = 1,000 ft. Major power generation 5 statute mi.	BLM practices to prevail up to withdrawn boundary. No activities within withdrawn area.	BLM practices to prevail except following separation distances apply: Power lines: greater than 250kV must exceed 4 mi. No activities within withdrawn area. Major power generation must exceed 4 mi.	Runways and Taxiways: Not allowed. Clear Zone: BLM practices to prevail for underground use. Approach Zone: BLM practices to prevail with structure height restriction.	Pad: Not allowed. Approach Zone: BLM practices to prevail with structure height restriction.
AF may approve ROW request on non-interference basis.	Same as for HSS.	Same as for HSS. Activities within 2.5 mi of OBTS may be periodically restricted during testing.	Runways and Taxiways, Clear Zone and Approach Zone: FAA and BLM practices to prevail.	Same as Airfield.
BLM practices to prevail up to withdrawn boundary.	Same as for HSS.	No activities within withdrawn area and allowed no closer than 2,965 ft.	Runways and Taxiways: Not allowed. Clear Zone: Not allowed. Approach Zone: BLM practices to prevail with structure height restriction.	Pad: Not allowed. Approach Zone: BLM practices to prevail with structure height restrictions.
BLM practices to prevail up to withdrawn boundary.	Allowed no closer than 1,780 ft.	Allowed no closer than 4 mi.	Runways and Taxiways: Not allowed. Clear Zone: Not allowed. Approach Zone: BLM practices to prevail.	Pad: Not allowed. Approach Zone: BLM practices to prevail.

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Table 1.8-1. Public Uses Surrounding M-X Facilities (Page 1 of 4)

Public Uses	Horizontal Shelter Site (HSS)	CMF	ASC	Roads
Railroads	Allowed no closer than 1,750 ft.	Same as for HSS.	Allowed no closer than 1,750 ft. from Missile Safe Haven.	Proposals for use of AF ROW will be evaluated and recommendations will be forwarded to Department of Interior. No direct connections allowed.
Overflight	Must observe FAA minimum safe altitude of 500 ft.	Same as for HSS.	Private aircraft not allowed on AF heliports. Must observe FAA minimum safe altitude of 1,000 ft.	Must not interfere with M-X operations. Must observe FAA regulations.
Public Airfields and Heliports	FAA and BLM practices to prevail and habitable buildings must exceed 2,965 ft.	Same as for HSS.	FAA and BLM practices to prevail and habitable buildings must exceed 2,965 ft. from Missile Safe Haven.	FAA and BLM practices to prevail.
Off-Road Vehicles	BLM practices to prevail up to fenced area. No activities within withdrawn area. Activities within AF ROW may be restricted during transporter movements.	BLM practices to prevail up to fence. No activities within withdrawn area.	BLM practices to prevail up to fence. No activities within withdrawn area.	BLM practices to prevail, but must observe speed limits. No racing events. Must not interfere with M-X operations.
Fishing	N/A	N/A	N/A	BLM practices to prevail within AF ROW, and the roadway will be available for use on a non-interference basis.
Hunting	BLM practices to prevail up to fenced area. No activities within withdrawn area. Activities within AF ROW may be restricted during transporter movements.	BLM practices to prevail up to fence. No activities within withdrawn area.	BLM practices to prevail up to fence. No activities within withdrawn area.	BLM practices to prevail within AF ROW, and the roadway will be available for use on a non-interference basis.
Hiking and Horseback Riding	BLM practices to prevail up to fenced area. No activities within withdrawn area. Activities within AF ROW may be restricted during transporter movements.	BLM practices to prevail up to fence. No activities within withdrawn area.	BLM practices to prevail up to fence. No activities within withdrawn area.	No restrictions on ROW. State and federal laws and regulations will apply on roadway.
Camping	BLM practices to prevail up to fenced area. No activities within withdrawn area. Activities within AF ROW may be restricted during transporter movements.	BLM practices to prevail up to fence. No activities within withdrawn area.	BLM practices to prevail up to fence. No activities within withdrawn area.	BLM practices to prevail within AF ROW, and the roadway will be available for use on a non-interference basis.
Predator Control	BLM practices to prevail up to withdrawn boundary. No activities within withdrawn area. Activities within AF ROW may be restricted during transporter movements.	BLM practices to prevail up to withdrawn boundary. No activities within withdrawn area.	BLM practices to prevail up to withdrawn boundary. No activities within withdrawn area.	BLM practices to prevail within AF ROW and the roadway will be available for use on a non-interference basis. Activities within AF ROW may be restricted during transporter movements.

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Table 1.8-1. Public uses surrounding M-X facilities (Page 4 of 4).

OB	DAA	OBTS	Airfield	Heliport
AF may approve ROW requests on non-interference basis.	Allowed no closer than 1,780 ft.	Allowed no closer than 4 mi.	Runways and Taxiways: Not allowed. Clear Zone: Not allowed. Approach Zone: BLM practices to prevail.	Pad: Not allowed. Approach Zone: BLM practices to prevail.
Must observe FAA minimum safe altitude of 1,000 ft.	Same as OB.	Must observe FAA minimum safe altitude of 1,000 ft.	M-X airfield will be available for use by general public.	Private aircraft not allowed on AF heliports.
FAA and BLM practices to prevail.	FAA and BLM practices to prevail and habitable buildings must exceed 2,965 ft.	Allowed no closer than 4 mi.	FAA and BLM practices to prevail.	FAA and BLM practices to prevail.
BLM practices to prevail up to withdrawn boundary.	BLM practices to prevail up to withdrawn boundary.	BLM practices to prevail up to withdrawn boundary, activities within withdrawn area. Activities within 2.5 mi of OBTS may be periodically restricted during testing.	Runways and Taxiways: Not allowed. Clear Zone: Not allowed. Approach Zone: BLM practices to prevail.	Pad: Not allowed. Approach Zone: BLM practices to prevail.
BLM practices to prevail up to fenced area. Activities may be authorized where compatible in accordance with state permit procedures.	BLM practices to prevail up to fence. No activities within withdrawn area.	BLM practices to prevail up to withdrawn boundary. Activities within 2.5 mi of OBTS may be periodically restricted during testing.	Activities may be authorized where compatible in accordance with state permit procedures.	Pad: Not allowed. Approach Zone: Activities may be authorized where compatible with state permit procedures.
BLM practices to prevail up to fenced area. Activities may be authorized where compatible in accordance with state permit procedures.	BLM practices to prevail up to fence. No activities within withdrawn area.	Allowed up to withdrawn boundary. Activities within 2.5 mi of OBTS may be periodically restricted during testing.	Runways and Taxiways: Not allowed. Clear Zone: Not allowed. Approach Zone: No explosives. BLM practices to prevail.	Pad: Not allowed. Approach Zone: No explosives. BLM practices to prevail.
BLM practices to prevail up to fenced area. Designated areas may be open to general public.	BLM practices to prevail up to fence. No activities within withdrawn area.	Allowed up to withdrawn boundary. Activities within 2.5 mi of OBTS may be periodically restricted during testing.	Runways and Taxiways: Not allowed. Clear Zone: Not allowed. Approach Zone: BLM practices to prevail.	Pad: Not allowed. Approach Zone: BLM practices to prevail.
BLM practices to prevail up to fenced area. Designated areas may be open to general public.	BLM practices to prevail up to fence. No activities within withdrawn area.	Allowed up to withdrawn boundary. Activities within 2.5 mi of OBTS may be periodically restricted during testing.	Runways and Taxiways: Not allowed. Clear Zone: Not allowed. Approach Zone: BLM practices to prevail.	Pad: Not allowed. Approach Zone: BLM practices to prevail.
BLM practices to prevail up to withdrawn boundary. No activities within withdrawn area.	BLM practices to prevail up to withdrawn boundary. No activities within withdrawn area.	Allowed up to withdrawn boundary. Activities within 2.5 mi of OBTS may be periodically restricted during testing.	Runways and Taxiways: Not allowed. Clear Zone: No explosives. Approach Zone: No explosives.	Pad: Not allowed. Approach Zone: No explosives.

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Mining

Mining activities will be allowed up to the withdrawn boundaries. Initial siting includes the avoidance of potential mineral resource areas. If a major mineral deposit is discovered near a shelter site, the Air Force may deactivate the site. During exploration activities subsequent to M-X deployment, lists of instruments and their location may be requested for those emplaced more than 30 days. In addition, some mining-related activities, such as the use of explosives and recording sensors, may temporarily be restricted within a 2 1/2 mi radius of the Horizontal Shelter Site (HSS) during testing at the OBTS. See Section 1.2.3.9 for further details on OBTS.

Agriculture and Grazing

Limitations on grazing and agricultural activities are minimal. These activities may occur up to the fenced area. However, agricultural activities that involve deep tilling of the soil will be prohibited on the portion of Air Force rights-of-ways that contain buried cables, antennas, and utilities. Additionally, crops exceeding eight inches in height will not be permitted within clear zones defined to be 10 m (30 ft) outside of fences around shelter sites, CMFs, and the weapons storage area of the DAA. Agriculture and grazing lands located on Air Force installations may be available for outleasing when they are temporarily unneeded. Outleasing practices are governed by Air Force Regulation 91-26, Section 17. Following construction, access may be temporarily restricted to areas being revegetated to facilitate establishment of new growth.

Utilities

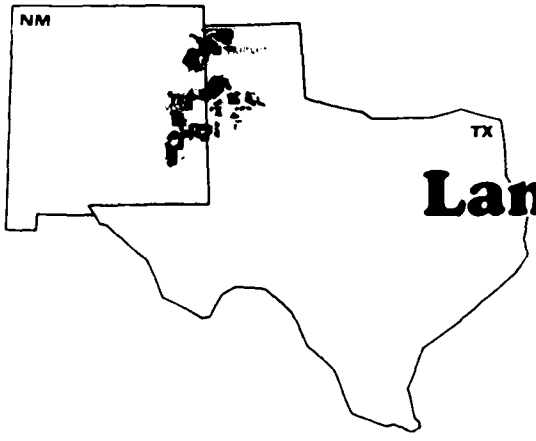
Transmission lines and pipelines cannot be emplaced within prescribed distances of M-X facilities as identified in Table 1.8-1. These restrictions may limit either the number or voltage level of power lines and the number or size of pipelines.

Roads

Subsequent to construction and checkout of the M-X system, the Air Force has no objection to normal use of its roads by the public. However, on occasion, restrictions will be imposed, generally limited to instances when missiles are being moved (see Section 1.2.2.1, "Cluster and Support Roads").

Camping and Other Recreational Activities

Limitations imposed on camping and other recreational activities will be to protect preservation of location uncertainty and, therefore, involve temporary restrictions in the deployment area during transporter movements and testing activities at the OBTS.



Land Acquisition

1.9 LAND ACQUISITION

The Air Force may also acquire private and state-owned property rights, as necessary, to meet M-X deployment requirements[1]. If so, the estimated acquisition costs for such lands will be included in the appropriate fiscal year military construction program, as required by construction phases. Subsequent to the enactment of the Military Construction Authorization and Appropriation Acts, the Air Force will direct the Army Corps of Engineers, as the agent of the Air Force, to acquire the necessary private property. Land acquisition will be accomplished according to current laws and regulations.

Policies and procedures for acquiring real property are contained in Air Force Regulation 87-1 and the Corps of Engineers pamphlet 405-1-2. Title searches will be made to determine who owns and has rights in the land. Legal descriptions and maps reflecting the extent of the acquisition will be completed for each ownership in the project area. Appraisals estimating the value of compensable interest in both public and private lands will be prepared by qualified staff or contract real estate/mineral appraisers familiar with the local area and market conditions.

Every effort will be made to acquire privately owned lands and rights therein as well as valid private interests in the public lands through negotiated settlement. The appraised value of each individual tract will be the basis for the government's initial offer to the owner. If an agreement is reached, a deed or other conveyancing document is executed, recorded, and the owner is paid. If negotiated agreement cannot be reached or if clear title cannot be conveyed, the Department of Justice may file an eminent domain action in the federal court having jurisdiction over the area. The Air Force will request the court to grant immediate possession of the property when required to support scheduled construction. The title to the land interest is acquired by the government on the date of filing and concurrent deposit of a check in the amount of the appraised value in the federal court. The landowner may, with the permission of the court (which is normally granted), withdraw most or

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[1]For more detailed information on the land acquisition process, see "A Procedural Guide for the Acquisition of Real Property by Government Agencies," Department of Justice.

all of the deposit and use the money. When a final determination of compensation is made and a judgment is signed by the court, the remainder of the compensation, if any, is paid to the owner, together with interest on amounts over and above the deposit.

When public domain land is available, the Air Force will avoid the use of private property to the extent possible. Private property that is required will be selected and used so as to mitigate environmental impacts. Moreover, the selection of specific siting will be accomplished to minimize impacts on adjacent land uses.

The acquisition of private property will be judged by the policies and procedures of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646; 84 Stat. 1894;42 U.S.C. 4610 et seq.). Some of these are:

- The fair market value of the acquired real estate will be developed by a qualified professional appraiser. The owner or his designated representative shall be given an opportunity to accompany the appraiser during his inspection of the property.

- Every reasonable effort shall be made to acquire privately owned real property expeditiously by negotiation.

- The owner will be offered the full amount established as just compensation In no event will this amount be less than the Government's approved, appraised market value of the property. The owner will be provided with a written statement of the amount established as just compensation and a summary of the basis for establishing it.

- The owner of real property will be paid the agreed purchase price, or a deposit of the full appraised value will be made with the court for his benefit, before the Government will take possession of the property.

- The date of possession by the Government will be scheduled to the greatest extent practical be to give the owner at least 90 days advance written notice to move.

- If the acquisition of a portion of an ownership would leave the owner with an uneconomic remnant, an offer will be made to acquire the entire ownership.

For those ownerships to be acquired where relocation will be required, relocation assistance is available in accordance with Title II of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. This law provides for uniform and equitable treatment of persons displaced from their homes, businesses, or farms. All persons to be displaced will be fully advised as to the relocation benefits. These benefits are intended to reduce hardships and are entirely separate from, and in addition to, the price paid for the property acquired. In general, the law seeks to reimburse all persons displaced from dwellings, businesses, or farms for reasonable moving expenses and to provide them with housing at least equal to that which they were required to vacate.

Qualified owners and tenants displaced from their homes are entitled to reimbursements for reasonable expenses in moving to replacement housing. Supplemental housing payments of up to $4,000 for tenants and up to $15,000 for owners is authorized to secure adequate leased or purchased replacement housing. Payments for incidental expenses to purchase replacement housing is also authorized. In general, the law seeks to provide displaced persons with housing at least equal to that which they are required to vacate. Persons living in substandard housing will be assisted in moving into the housing meeting minimum standards with respect to decency, safety, and sanitation.

Business owners, including farmers and ranchers, are entitled to reimbusement of expenses incurred in searching for and moving to replacement location. In lieu of actual reasonable moving and related expenses, an owner may elect to receive a payment equalling the overall net annual business earnings and the payment shall not be less than $2,500 nor more than $10,000.

Regarding the choice between private or public land, a commentor charged that the Air Force has an unfounded automatic preference for the use of public land.

PUBLIC COMMENT ON THE DRAFT EIS:

> "'Siting regions containing large amounts of private land are relatively undesirable because of public reaction to condemnation procedures. Acquiring private land may entail significant cost and schedule risks.' (The commentor is quoting from page 5-12 of Chapter 5 of the Draft EIS.)
>
> "Fear of these consequences is not an adequate basis for adopting a policy of automatic preference for use of public land.
>
> "The Air Force is basing its assumption of public preferability in part on fear of public reaction. The proposed solution to that problem exploits the fact that public land has no specific spokesman to arouse public sympathy. This is precisely the kind of decisionmaking that NEPA was enacted to eliminate." (B0124-6-021).

The Proposed Action would place the system primarily on public lands; the alternatives of full basing in Texas/New Mexico and the corresponding portion of split basing (Alternatives 7 and 8) would deploy the system almost exclusively on private land.

It appears evident that both the decisionmaker for deployment area selection and the Congress will be keenly aware of the issue of locating the M-X system on public lands, private lands, or a split between the two. It also appears evident that those determining land withdrawal/acquisition must consider that there are certain benefits to placing M-X on public lands. These benefits include the fact that it is less expensive, that it does not interfere with private ownership of land, that it avoids displacing citizens from land they may have owned for generations, and that the use of public land spreads the burden over all the citizens of the nation, who, in effect, share in the ownership of the lands.

On the other hand, the decisionmakers must likewise weigh the consequences of using public lands for M-X deployment that could otherwise be used for energy projects, mining, grazing, national parks, and other competing demands.

Ultimately it will be the Congress of the United States which will determine what property will be used to site the M-X by either authorizing the use of public lands pursuant to the Engle Act or the acquisition of private lands through the Military Construction Program authorization and appropriation acts.

Environmental Impact Analysis Process

1.10 ENVIRONMENTAL IMPACT ANALYSIS PROCESS

BACKGROUND (1.10.1)

This environmental impact statement (EIS) has been prepared by the United States Air Force in compliance with the National Environmental Policy Act, 1969 (P.L. 91-190, 1970) (NEPA) to assist in making decisions on where to deploy the M-X, which includes operating bases, roads, protective shelters, and other support facilities; to be part of an application for the withdrawal of public lands; and to be considered in a decision to acquire private property.

TIERED DECISIONMAKING (1.10.2)

As previously discussed, this EIS provides environmental information to aid in making two major decisions: selection of the DDA and of the OB suitability zones. It does not, however, contain all of the information which will become available over the next few years for selection of each specific facility site. This process of step-by-step analysis and decisionmaking is called "tiering" and is authorized by the Council on Environmental Quality regulations implementing NEPA. Tiering is appropriate when the sequence of analysis is from an EIS at an early decision stage, such as this DDA selection and OB vicinity selection, to a later stage of selecting specific facility construction sites.

This EIS presents the environmental consequences of conceptual missile deployment layouts and conceptual operating base layouts. These conceptual layouts have been tentatively sited within the suitability zones of a bi-state suitability area. Zones were determined to provide suitable alternative layout potential, taking into account system operation, geologic features, support requirements, and desirable features, and avoiding known, sensitive environmental areas.

The boundaries of these suitability zones are based upon data from remote sensing (Landsat and aircraft photography), published data, data supplied by federal and state agencies, and field work. As field work and consultation processes for the development of specific site proposals progresses, scientific field verification will reveal changes to the suitability zone boundaries (see Chapter 2, Section 2.1).

This area-wide EIS (Tier I) will not be used to decide irrevocably the sites of each individual facility or the OB boundary within the suitability zones. Decisions regarding the siting of each individual facility, utility corridor and the OB boundary, as well as site-specific location of construction camps and their attendant life support facilities, will follow further, more site-specific analyses in subsequent tiers. This area-wide EIS is used in the first decision (Tier I) and will follow the conventional Draft to Final EIS process shown in Figure 1.10.2-1.

Considering this EIS (Tier I) and other factors, the decisionmaker will irrevocably select a missile deployment suitability area in one or two bi-state regions and will also select suitability zones within that suitability area for the two OBs. These zones are identified in Section 2.1.3.3. The individual and cumulative environmental consequences of siting conceptual layouts within their respective suitability zones are contained in Chapter 4 of this EIS and compared in Chapter 2. In the event subsequent site-specific studies reveal unsuitabilities not previously known, it may become necessary to adjust the sitings shown by the conceptual layout. The system may expand or contract from the conceptual layout, within or between hydrologic subunits or counties, but will remain within the Tier I Siting Area identified in this EIS. Certain external support elements such as railroad spurs or utility corridors may be partially sited in hydrologic subunits or counties outside the Tier I Siting Area. The locations for such elements have not yet been determined and will require assessment in subsequent tiers. In the event that it becomes necessary to move to a hydrologic subunit or county outside this Tier I Siting Area, an environmental assessment will be prepared to determine whether an EIS will be required. To be certain that the consequences of the specific sitings in each increment of Tier II decisionmaking are known before the final site is selected, engineering and environmental field studies for the specific site will be conducted. These continuing studies will provide information for selection of specific sites in each subsequent Tier II increment. The Tier II increments will generally be identified with the fiscal year construction program increments, for example, Tier IIA would include the fiscal year (FY) 1982 military construction program, Tier IIB would include the FY 1983 program, etc. Some years may be aggregated or subdivided depending upon planning cohesion factors, field work progress, etc.

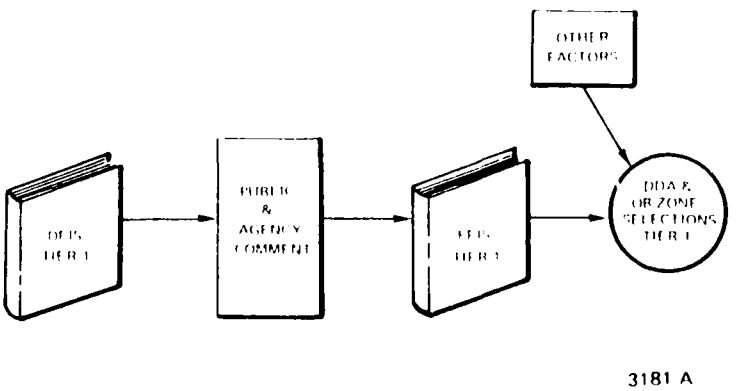

Figure 1.10.2-1. Tiering process--Tier I selections.

Tier II decisionmaking contributes to development of an operating base comprehensive plan (BCP), which through narrative and graphic techniques describes the physical development plan for M-X facilities (Figure 1.10.2-2). In final form, it illustrates operational economic, social, environmental and legal aspects of all current and projected land use for the OB and its offbase sites, including the DDA, OBTS, ASCs, DTN, etc. The development of the BCP in Tier II includes input from, and coordination with, state and local planning agencies and the Department of Defense's Office of Economic Adjustment (OEA). The BCP development process will ultimately develop specific site proposals for the OB and its offbase sites within the suitability zones of the Tier I Siting Area. The BCP process will initially show the boundary of the base and include boundaries of specific sitings required for the first increment of construction (Tier IIA) as well as some immediate follow-on facilities in later increments. The BCP at the Tier IIA stage will identify the preliminary base development foot print and the major road network, including runway orientation, industrial area, community center, recreation areas, housing, etc., as well as the total preliminary DAA foot print. The Tier IIA decision will also include specific site selections and boundaries for the offbase OBTS and DTN corridor connecting the base, the OBTS, and the DAA. Construction marshalling yard, life support facility site, and utility corridors may also be identified. The BCP development process at the Tier IIA stage will produce three principal products as shown in Figure 1.10.2-3.

Site-specific environmental field studies will be conducted to verify the consequences of the Tier IIA specific facility sitings, and a report assessing these findings will be prepared. The site selections will be accomplished through an interdisciplinary effort of operational and environmental planners from the Air Force, the Corps of Engineers, and the Bureau of Land Management, with contractual assistance, who will work in coordination with state and local planning agencies.

In developing proposals for specific site selections in Tier II increments, the facility siting team will consider the environmental consequences predicted in this EIS (Tier I). The specific site selection process of Tier II will carefully consider environmental and suitability factors found in the the field studies, and the site selection team may have the opportunity to avoid adverse environmental consequences predicted in this EIS (Tier I). A report predicting the environmental consequences of sitings proposed by the facility siting team will be documented in a site-specific Environmental Assessment (EA) for use in each increment Tier II site-specific decision. The findings in the EA for the Tier II decision will be compared with the impacts predicted in this EIS (Tier I), as shown in Figure 1.10.2-4.

If the impacts are found to be less adverse, or substantially the same for sitings within that hydrological unit or county, the Air Force will prepare a Finding of No Significant New Impact (FONSNI), officially documenting this comparison (See Figure 1.10.2-5.)

This FONSNI would be provided to the Corps of Engineers to proceed with the public land withdrawal or private land acquisition in accordance with applicable legislative authority. Public hearings would be held on the withdrawal of land for the Tier II sites, as well as an invitation for the public to comment on the FONSNI. The FONSNI for acquisition of land would be available to the public for comment on

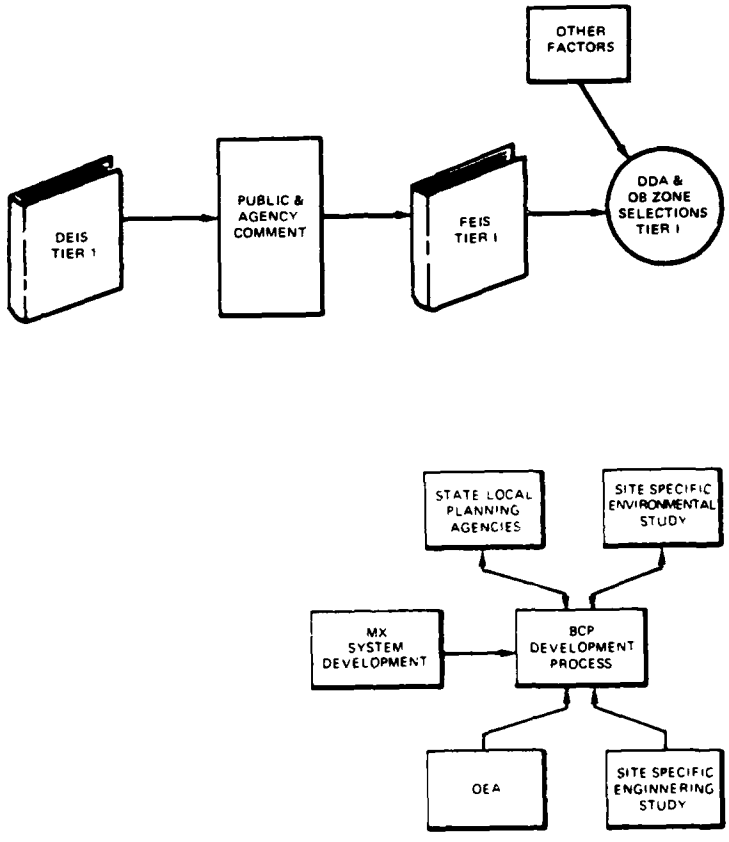

Figure 1.10.2-2. Tier II--base comprehensive plan (BCP) development process.

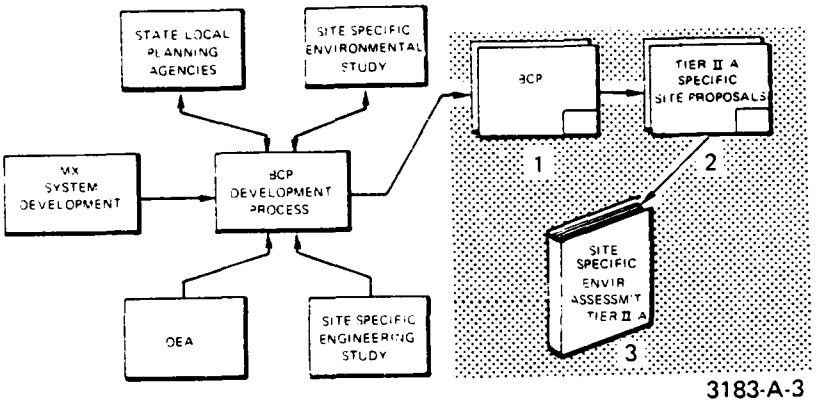

Figure 1.10.2-3. Tier II--base comprehensive plan products.

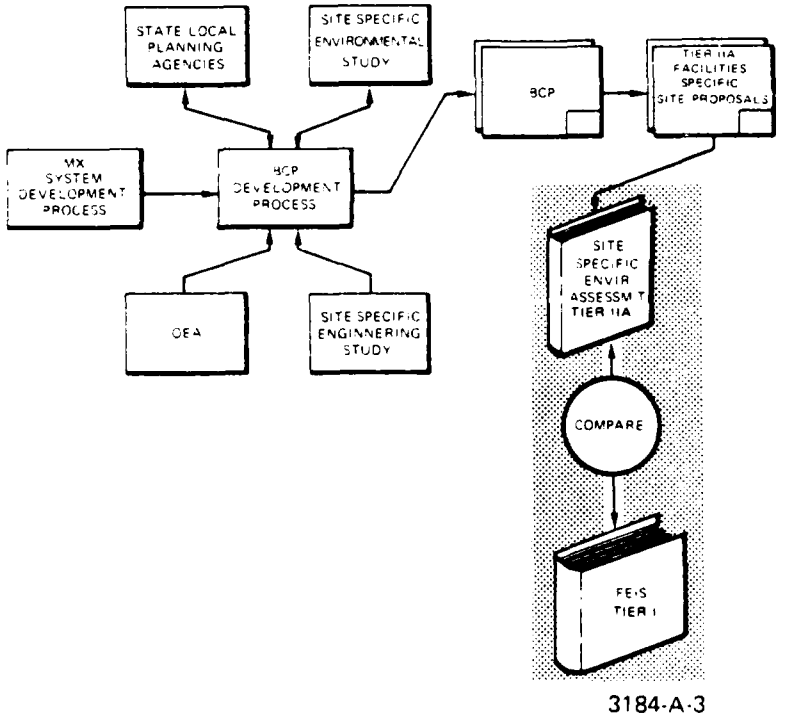

Figure 1.10.2-4. Tier I and Tier II--comparisons of environmental analysis.

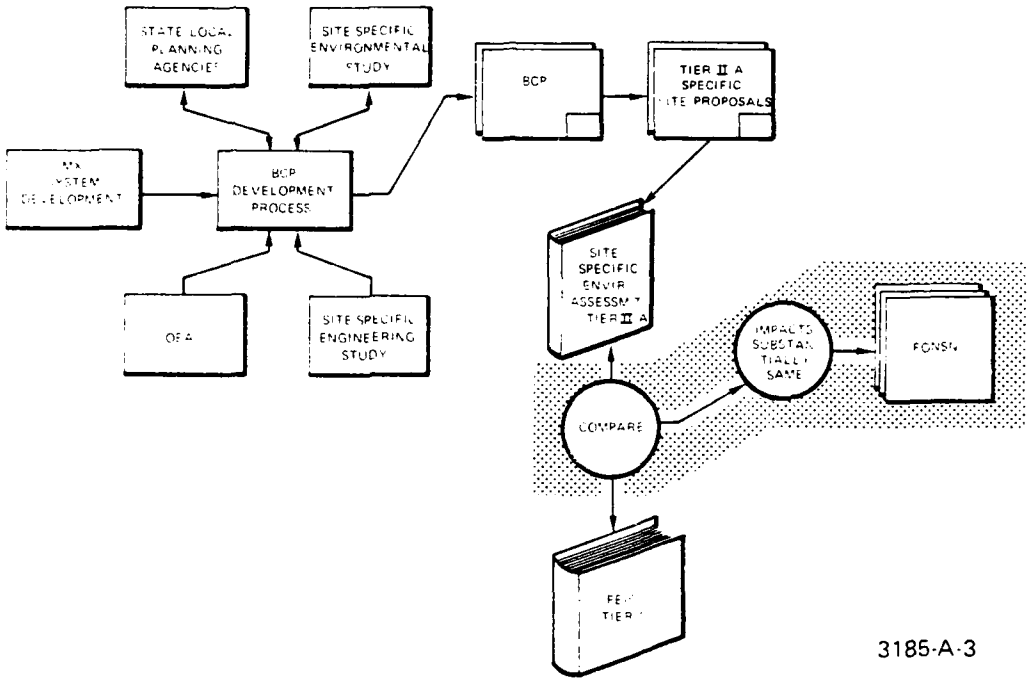

Figure 1.10.2-5. Finding of no significant new impact (FONSNI).

request. Following public comment and in consideration of those comments received, a decision will be made to proceed with the land withdrawal or acquisition in accordance with enabling legislative procedures or to amend the site selection of the Tier II proposals. This sequence is shown in Figure 1.10.2-6.

On the other hand, should the comparison of the Tier II environmental assessment and the area-wide EIS (Tier I) reveal that the predicted adverse impacts are substantially worse, then a draft supplemental EIS will be prepared. See Figure 1.10.2-7 for this sequence. Successive site-specific decisions would be grouped in subsequent Tier II increments (II, IIB, IIC, etc) and similarly processed.

As decisionmaking becomes more site specific, the mitigations for specific sites also require more specificity because of unique combinations of features at individual sites. Mitigations outlined for decisionmaking in the Tier I EIS are in some cases necessarily generic. Expansion, modification, and introduction of new mitigations in subsequent tiered decisionmaking may be required.

Final adjustments of individual facility sitings (within the metes and bounds boundary of withdrawn or purchased land) would remain in compliance with the land

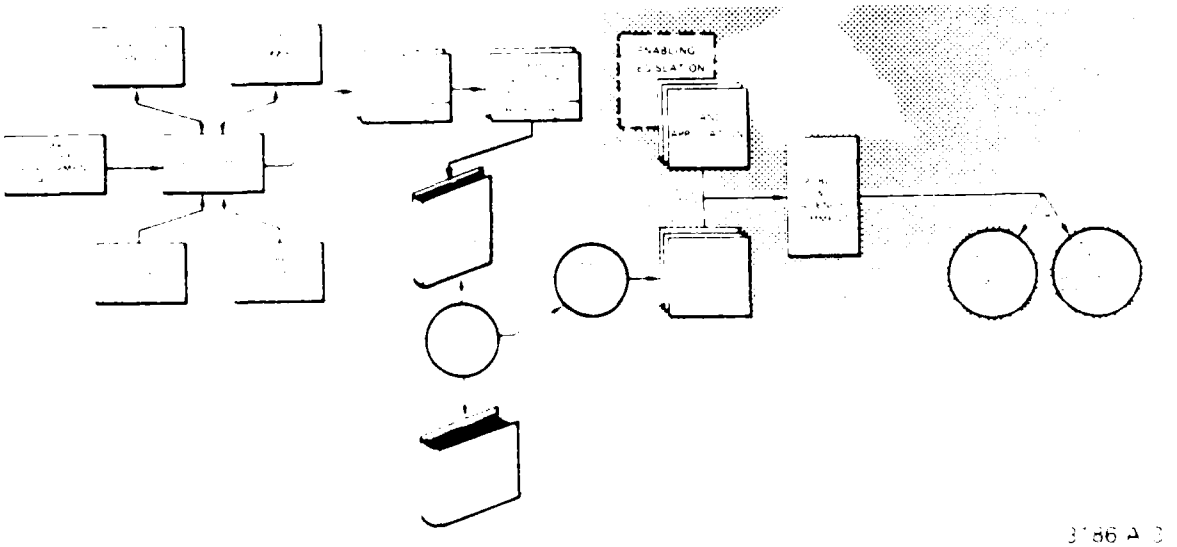

Figure 1.10.2-6. Public and agency review of application and FONSNI.

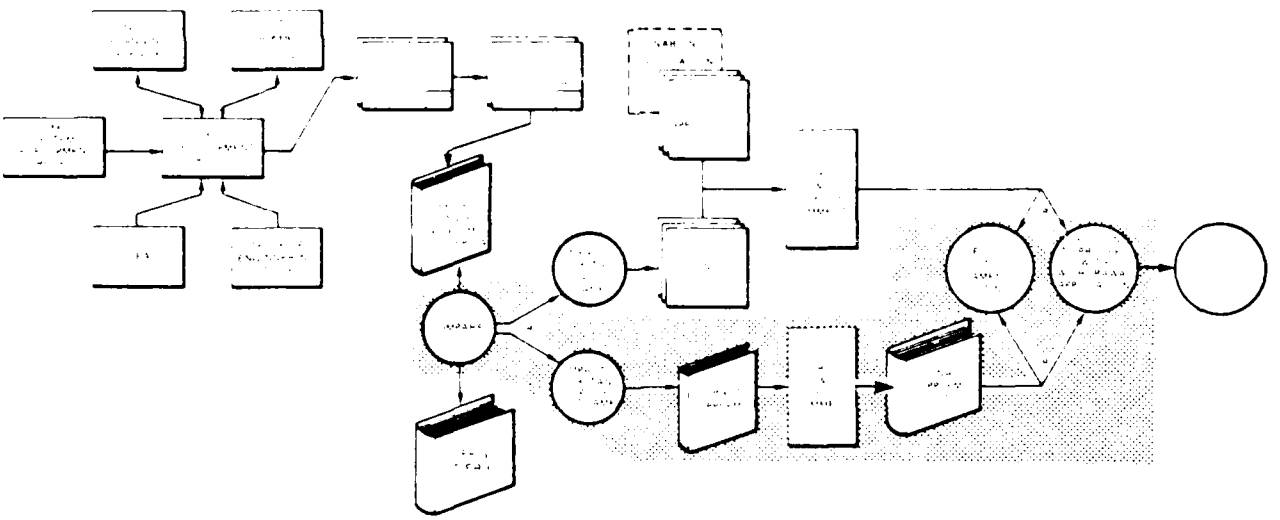

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Figure 1.10.2-7. Tier II--requirements for supplemental EIS.

use plans and patterns upon which Tier II decisions were based. Should subsequent substantive deviation from those land uses be required, specific proposals on those deviations would be developed in accordance with established mitigation measures and siting criteria and would be assessed to determine whether environmental consequences have changed from those predicted in the Tier II environmental assessment. In the event of discovery of significant new impacts or substantive increases in the significance of previously predicted impacts, a supplemental EIS would be prepared.

RESOURCE IDENTIFICATION (1.10.3)

This EIS focuses on a set of environmental resources related to the Proposed Action and alternatives. Potentially significant resources were identified during agency and public scoping supplemented by the review of an interdisciplinary professional team.

Scoping (1.10.3.1)

The Council on Environmental Quality Regulations implementing NEPA state that there shall be an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. This process is called scoping. As part of scoping, the lead agency invites agency and public participation to determine the scope of the environmental impact statement and the significant issues to be analyzed in it. Those issues which are not significant or which have been covered by earlier environmental review are identified and eliminated from detailed study.

During December 1979, January 1980, November 1980, and December 1980, the Air Force conducted a number of federal agency, state agency, and public meetings to receive opinions on significant resources to be addressed in the EIS. Over 5,000 people attended the meetings and approximately 500 letters were received.

Eleven key issues for environmental analysis were identified:

- Rapid, large-scale growth
- Land use/land rights
- Water resources
- Public health and safety
- Archaeological and historical resources
- Energy and nonrenewable resources
- Terrestrial and aquatic biology
- Air quality
- Native Americans
- Construction resources
- Engineering

Table 1.10.3-1 shows subdivisions of these issues and identifies those which are outside the scope of the EIS. In general, the latter group focuses on national defense or matters beyond Air Force control. The results of the scoping process are contained in the report "Summary of Scoping for the M-X: Deployment Area Selection/Land Withdrawal Environmental Statement" originally published in April, and revised in December 1980.

Table 1.10.3-1. Key issues/public concerns identified in scoping process.

Key Issue Category	Detail Scoping Issue
Rapid, Large-Scale Growth	M-X interaction with other projects; size of military and civilian employment; sewage/solid waste; local and small business opportunities; citizen/Air Force communications; education
Land Rights/Land Use	Alternative deployment sites; recreation and wilderness areas; permitting and compliance with state/local laws and regulations; citizen/Air Force communications; air-space restrictions; grazing; agriculture
Water Resources	Surface hydrology; post-EIS inventories and monitoring; permitting and compliance with state/local laws and regulations
Public Health and Safety	Noise; security configuration
Archaeological/Historical Resources	Permitting and compliance with state/local laws and regulations
Energy and Nonrenewable Resources	Electrical energy and petroleum products
Terrestrial and Aquatic Biology	Protected species; post-EIS inventories and monitoring; hunting and fishing restrictions
Air Quality	Post-EIS inventories and monitoring; permitting and compliance with state/local laws and regulations
Native Americans	Land, water, and cultural resource conflicts
Construction Resources	Cement, sand and gravel, and steel requirements
Engineering road maintenance	Civilian co-use of military facilities, transportation,
Issues Outside Scope of EIS	Civil defense facilities; credibility of Air Force planning, studies, statements; extent of citizen influence on M-X decisionmaking; M-X vs. alternatives for national defense; interaction of M-X and SALT II; SALT II; Sagebrush Rebellion; alternative deployment modes

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Professional Interdisciplinary Review (1.10.3.2)

Subsequent to publication of the "Summary of Scoping for the M-X," the issues were categorized into 35 significant environmental resources for further analysis. These resources are summarized in Chapter 2 of the EIS. More extensive analysis of these resources and others which are not significantly impacted is included in Chapter 4 and ETRs related to the particular resources.

COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT (1.10.4)

The Draft Environmental Impact Statement was filed with EPA and distributed to the public in December 1980. A 90-day public comment period, which is twice the minimum length required by regulation, began in January 1981 and was scheduled to close on 1 April 1981. It was extended to 120 days to permit a more thorough review by the public and to provide additional time for the Air Force to coordinate with state and local groups who were engaged in a very detailed review of the voluminous DEIS.

According to the President's Council on Environmental Quality Regulations, the primary means of obtaining relevant technical information and comments from government agencies and the public is through receipt of written comments. However, there was, and continues to be, sufficient interest and potential environmental controversy concerning the project that additional opportunities were offered for written and oral comments via public hearings (See Section 1.10.5).

By the close of the comment period on 1 May 1981, the Air Force had received a total of 1,986 letters and statements (generally letters), summarized in Table 1.10.4-1. As noted in the table, the largest number of comment letters came from private citizens, and the second largest number of comments came from public hearings.

Each comment was catalogued with an identification number for computer processing and categorized into one of the six major groups shown in Table 1.10.4-2. The category receiving the highest number of comments was "water availability and use." Meetings with local residents in potential deployment areas confirm that water availability is a very significant issue. The number of comments catalogued in other categories serves as a very rough measure of the relative concern for that category. When "comments" are referred to in this FEIS, "comments" means the single issue or group of related issues bracketed together. Depending upon its length, a "comment" may contain anywhere from one to five or more issues.

The range of comments was very broad: for example, some comments pointed out editorial errors (e.g., incorrect spelling, incorrect labels to charts, etc.) and require little effort to correct. Other comments requested additional studies or reanalysis. Comment review took several months. Some comments expressed opinions either for or against the Proposed Action. Regardless of the nature of the comment, whether technical or personal, all were considered.

Most of the new or revised material in this FEIS is in response to comments. Opposing views, expressed by direct quotes in most cases, have been incorporated into the text of this FEIS in Chapters 1, 2, and 4. For completeness and convenience to the reader, Chapter 6 addreses all comments received, Air Force responses,

Table 1.10.4-1. Number of DEIS commentors.

Sender Category	Number of Commentors
Federal Agencies	32
Native Americans	10
State and Local Agencies	61
National Organizations	33
Local Organizations	135
Individuals	923
Public Hearings	781
Petitions	11
Total	1,986

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Table 1.10.4-2. Number of comments[1] assigned in socio/cultural, economic and policy categories (Page 1 of 3).

Category	Number of Comments
Socio/Cultural	
Archaeology/Paleontology	347
Education	219
Health Services	206
Health Concerns	43
Native Americans	786
Population (human)	397
Public Safety	202
Quality of Life	960
Recreation	537
Subtotal	3,697
Economic	
Agriculture	333
Earnings/Procurement	272
Grazing/Livestock/Ranch	443
Housing	263
Labor/Employment	600
Land Use	504
Public Finance	391
Subtotal	2,806
Policy	
Basing Mode Alternatives	315
Cost Analysis	189
Legal	565
Location Alternatives	343
Methodology	285
Oppose Defense	38

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Table 1.10.4-2. Number of comments[1] assigned in socio/cultural, economic and policy categories (Page 2 of 3).

Category	Number of Comments
Policy, cont'd	
Oppose M-X	909
Oppose Spending	143
Political/Policy	1,175
Support Defense	76
Support M-X	114
Subtotal	4,152
Biological/Physical	
Air Quality	273
Aquatic Species	167
Geology/Mining/Minerals	637
Native Vegetation	617
Water Availability and Use	1,321
Wetlands	20
Wilderness	263
Wildlife	1,050
Subtotal	4,348
Engineering	
Construction Resources	291
Energy	449
Engineering	577
Hazardous Waste Management	34
Noise Management	25
Solid Waste Management	30
Transportation	419
Wastewater Treatment	97
Water Quality	138
Subtotal	2,060

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Table 1.10.4-2. Number of comments[1] assigned in socio/cultural, economic and policy categories (Page 3 of 3).

Category	Number of Comments
Miscellaneous	
Editorial	710
General Comments	865
Other Comments	1,253
Subtotal	2,828
Grand Total All Comments	19,891

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[1] When "comments" are referred to in this FEIS, "comments" means the single issue or group of related issues bracketed together. Depending upon its length, a "comment" may contain anywhere from one to five or more issues.

opposing views, methodology, and a list of those organizations, agencies, or individuals who submitted comments.

PUBLIC HEARINGS (1.10.5)

Approximately three months after the DEIS had been distributed and the public had a reasonable opportunity to review the document, the Air Force conducted a series of 40 public hearings in 20 locations (two hearings at each location). The locations and dates are listed below:

LOCATION	HEARING DATE(S)
Las Vegas, Nev.	30 Mar 81
Cedar City, Utah	31 Mar 81
Milford, Utah	1 Apr 81
Delta, Utah	2 Apr 81
Salt Lake City, Utah	3 Apr 81
Ely, Nev.	4 Apr 81
Carson City, Nev.	6 Apr 81
Tonopah, Nev.	7-8 Apr 81
Pioche, Nev.	9 Apr 81
Austin, Texas	14-15 Apr 81
Lubbock, Texas	16 Apr 81
Amarillo, Texas	20 Apr 81
Dalhart, Texas	21 Apr 81
Clovis, N. Mex.	22 Apr 81
Roswell, N. Mex.	23 Apr 81
Santa Fe, N. Mex.	24 Apr 81
Reno, Nev.	27 Apr 81
Austin, Nev.	28 Apr 81
Elko, Nev.	29 Apr 81
Provo, Utah	30 Apr 81

The Air Force received requests to hold hearings at many more locations than shown above; however, it was not possible to hold all the requested hearings before the public comment period closed on 1 May 1981.

The hearing locations included:

- State capitals and the locations of recognized M-X Oversight Committees.
- The major community near each of the operating base sites identified in the Proposed Action or an alternative.
- Additional major communities to ensure at least 90 percent of the population of the affected counties (in the candidate deployment areas) would be within a one hour drive of a hearing.

The purpose of the public hearings was to provide individuals and organizations who may be affected by the Proposed Action or alternatives an opportunity to orally present their comments and/or ask questions in a public forum. Written comments could also be submitted for inclusion in the formal records of the hearings.

As shown in Table 1.10.4-1, a significant portion of the comments were obtained from the public hearings.

All comments were treated equally regardless of the manner in which they were received (e.g., written, oral, presented at a public hearing). Chapter 6 describes comment processing in detail.

Mitigations

1.11 MITIGATIONS

Many public comments were received on the treatment of mitigations in the Draft EIS. Representative remarks follow.

PUBLIC COMMENTS ON THE DRAFT EIS:

"The description of alternatives and the forecasting of impacts are presented at a general programmatic level. At this draft stage, however, the mitigation presentations are suggestive and admonitory in form. Again we appreciate the fact that mitigation actions cannot be detailed in the FEIS at this state of M-X program planning. However, even at the programmatic level the Air Force's approach to the mitigation of impacts can and should be refined. A process and plan should be developed and presented clearly and precisely, responsible agencies identified, and commitments made. We suggest that the FEIS contain a description of a mitigation plan of action." (A1156-8-034).

"The mitigation measures noted are vague and tend in many cases to place responsibility for mitigation on agencies other than the Air Force. They are unquantified and do not indicate to what extent they would be successful. There is, for example, no indication of how much labor demand would be reduced by "labor-saving technologies". These "technologies" are unspecified. Similarly, the programs to provide incentive for construction workers to locate their families in metropolitan areas are unspecified as are the costs of such programs and their effects on the metropolitan areas in terms of housing availability and impacts on public services. Mitigation measures for impacts on the metropolitan areas are, of course, also not mentioned." (A1052-9-223).

"Why not mitigate? There would need to be front-end money in order to prevent the problems. There would need to be houses, schools, public servants (policemen, firemen, etc.), water treatment facilities built, etc. If the M-X were a large business moving into the area, taxes would be levied in order to offset the cost of these needs, but the

Federal Government is not a large business and does not pay taxes. Therefore, the cost would have to be picked up by the residents." (A0943-0-008)

"Concerning planning, the U.S. Air Force should develop explicit mitigation measures identifying the process whereby local communities can actually participate in the decisions regarding design and construction of M-X facilities adjacent to their communities. Furthermore, the planning for the main operating base and associated community growth for the military bases is of mutual concern to the Air Force and local government and, therefore, a partnership should be developed for comprehensive planning of the base and the surrounding areas." (B-445-5-004)

As documented in congressional testimony and other public statements, the Air Force is committed to an effective mitigation program. Over the past few years the Air Force has worked closely with federal, state, and local agencies and has been responsive to public attitudes, particularly those of the people living in or near candidate deployment areas.

This Final EIS responds to criticism of the Draft EIS with an improved presentation and a more definitive description of mitigative measures. A great deal of attention has been given to mitigations throughout many sections of the FEIS. For example, the present section contains a general overview of mitigations, environmental planning, and community impact assistance. Chapter 2 outlines general mitigation strategy and program-level commitments by the Air Force for each resource. Chapter 4 amplifies information given in Chapter 2. ETR-38, "Mitigations," is the comprehensive reference for M-X mitigation programs. It contains more information than Chapters 2 or 4 regarding program-level commitments and specific mitigations the Air Force would accomplish or advocate. One of the sections in ETR-38 also lists mitigations which could be implemented but which the Air Force has not committed itself to carrying out. In addition to ETR-38, there are individual resource ETRs which contain as much, if not more, information on mitigations as ETR-38 for their particular resource.

Mitigations, as the term is used in this EIS, are measures undertaken to minimize the adverse environmental impacts of a project. Every effort has been and will continue to be made to avoid sensitive areas and thereby eliminate or reduce project impacts. This strategy is referred to as mitigation by avoidance; in addition to it, there are other mitigative programs to repair, rehabilitate, or restore the affected environment, and to reduce or eliminate impacts over time through preservation procedures or compensation. The degree to which mitigations are expected to be successful determines in part the significance of impacts and the relative ranking among alternatives. (Alternatives are ranked, from the perspective of each resource, in Section 2.3 of Chapter 2.)

System layout and construction phasing influence the magnitude, location, and duration of impacts. Construction demonstration tests conducted in Arizona during 1978 showed planning was a major factor in the successful mitigation of environmental impacts. Evaluation teams of biologists and archaeologists conducted field surveys in advance of construction. Sensitive areas such as archaeological or

historic sites, threatened and endangered species habitats, etc., were avoided. Direct and indirect environmental impacts near roads were limited through strict enforcement of construction corridor constraints. The successful use of these construction techniques shows that it is possible to reduce both direct and indirect impacts by planning.

The mitigation-by-avoidance technique has been used extensively in M-X planning. System layouts were designed to avoid Indian reservations; federal and state parks, monuments, forests, grasslands, historic sites, and game preserves; unique public recreational, historic, and natural areas; wilderness areas; playas; registered national landmarks and archaeological sites; unique and nationally significant wildlife ecosystems; known locations of rare plants; and locations of protected aquatic species. In addition, oil and gas fields, known strippable coal, oil shale, and uranium deposits, geothermal resource areas, pipelines, buried or surface electrical and communication lines, and major state and federal highways were avoided to reduce the potential for impacts on resource competition and/or constraints on future local opportunities.

Specific mitigations are included in each discussion of an environmental resource in Chapter 4 and centrally presented in ETR-38. In addition, Air Force Environmental Planning and M-X community planning are described below because of their critical importance to M-X mitigation planning.

AIR FORCE ENVIRONMENTAL PLANNING PROGRAMS (1.11.1)

Mechanisms for mitigating adverse environmental impacts are incorporated directly into the Air Force's Environmental Planning programs. All levels of command establish and maintain community, land use, natural resource, environmental protection, and pollution abatement and control plans. Additionally, the Environmental Planning functions implement Department of Defense and Air Force policies and programs to (1) protect and improve the natural resources of air, water and land, (2) to prevent, abate and control deterioration or pollution of the environment, and (3) to conserve and effectively use soil, water, vegetation, fish and wildlife, and man-made resources.

The Air Force Environmental Planning Program is better understood when viewed in relation to its major roles and the way each Air Force installation interacts with local and regional communities is seen. Each of the approximately one hundred major installations is:

- a community itself, providing housing and community services to its inhabitants and employees,
- an industry, creating employment for the surrounding community, and
- a land manager/owner with the rights and obligations to protect its property and activities.

Additionally, most installations include an airfield and/or aerospace operator responsible for providing national defense consistent with the health, safety, and welfare of the people living nearby.

Air Force environmental planning includes a set of goals which include:

- o Promoting the public health, safety, and welfare and the overall quality of life.
- o Ensuring wise protection, provision, use, and management of human, financial, natural, and man-made resources.
- o Promoting land use/airspace compatibility with offbase areas which affect, or may be affected by, base development and operations.
- o Determining the desires, concerns, priorities, and projected needs of the Air Force community.
- o Providing for current and long range operational/support capability to perform assigned, proposed, or potential missions.
- o Providing for participation and coordination with all levels of government in matters of environmental planning so that Air Force needs and concerns are made known and protected.

Air Force Environmental Planning is organized to ensure that the Air Force, operating within current constraints, can meet the requirements and responsibilities of each of its roles and achieve the goals listed above. Overall program management at each installation rests with the Base Civil Engineer. The environmental planning offices at each base are organized in three basic areas: community planning, environmental protection planning, and natural resource planning.

Community Planning (1.11.1.1)

Air Force community planning ensures that each installation is able to support current and future missions, with emphasis on: the timely provision of physical development; the minimization of adverse environmental effects resulting from base activities; and the proper use and management of natural resources. Community planning for M-X includes: (1) development and maintenance of the Base Comprehensive Plan (BCP), (2) management of the Air Installation Compatible Use Zone Program (AICUZ) (see ETR-10, "Noise"), and (3) management of the Interagency Intergovernmental Coordination for Environmental Planning Program (IICEP).

Environmental Protection Planning (1.11.1.2)

Air Force environmental protection planning coordinates all environmental quality standards, policies, and requirements affecting existing and proposed installations, and ensures that all Air Force actions are reviewed for environmental impact. Significant M-X activities within environmental protection planning for M-X includes: (1) management of the environmental impact analysis process, (2) preparation and maintenance of pollution control plans, and (3) organization and management of the Environmental Protection Committee. Committee functions are explained in Section 1.11.1.4.

Natural Resources Planning (1.11.1.3)

Air Force natural resources planning identifies, conserves, and manages the natural resources at an installation (fish, wildlife, open space, timber products, and outdoor recreation). Significant M-X activities of natural resources planning for M-X includes the preparation of natural resources plans and the management of natural resources conservation programs.

Environmental Protection Committees (1.11.1.4)

Environmental Planning Offices are assisted by Environmental Protection Committees at all levels of Air Force organization. The Environmental Protection Committees (EPC) consist of representatives from various career/functional areas and serve as a steering body to monitor the overall conduct of the Air Force Environmental Planning Program. Specifically, the committees review and coordinate policies and procedures in support of Air Force goals, coordinate and solve environmental protection problems, and ensure compliance with the Environmental Impact Analysis Process as required by NEPA and the President's Council on Environmental Quality Regulations.

Mitigation Management Plan Development (1.11.1.5)

For the M-X program, an M-X mitigation management plan was developed by the Air Force to formulate a mitigation plan for M-X. The mitigation plan will contain specific mitigation measures including implementation, monitoring, and compliance. Monitoring and compliance efforts provide the means for evaluating the accuracy of impact predictions, discovering unanticipated effects, identifying new mitigative requirements, and ensuring that mitigations planned for implementation in the Decision Paper are carried out. Inputs for the mitigation plan include this Final Environmental Impact Statement, M-X cooperative community planning activities, the M-X Decision Paper, and other Air Force plans and agreements.

Further mitigation measures are being developed during the tiered decisionmaking process and will become part of the mitigation plan (see Section 1.10.2).

There are two broad categories for mitigations in the FEIS. First, there are those which can be identified and implemented by the Air Force. This is particularly true for natural resources. Secondly, there are those which are beyond the direct control of the Air Force. The majority of mitigations in this second category concern socioeconomic impacts, which require cooperative community planning and impact assistance. The Air Force will work closely with appropriate agencies and local officials from impacted communities. The Air Force recognizes the planning prerogatives of others and looks to them for plans and programs within their purview.

M-X COOPERATIVE COMMUNITY PLANNING AND COMMUNITY IMPACT ASSISTANCE (1.11.2)

The Air Force has initiated a cooperative community planning process for the M-X Program among Department of Defense and other federal, state, and local agencies. This cooperative planning process has the following objectives:

- o to identify, characterize, and quantify M-X community impacts,
- o to develop plans and mechanisms to accommodate or mitigate the impacts,
- o to ensure appropriate financial resources are made available, and
- o to implement development plans for the mutual benefit of affected communities and the Air Force.

The primary responsibility for impact planning and the identification of impact assistance requirements rests with local and state government. The federal government's role is to be both a partner in the planning process and a provider of impact assistance. Historically, federal assistance has been made available to states and communities so that they would not have to bear an unfair and excessive financial burden in providing public facilities and services to newcomers who enter an area because of a major defense project.

At the federal level, the Air Force and the Office of Economic Adjustment (OEA) are jointly managing the impact planning and assistance program. The primary forum for federal coordination of impact assistance is the President's Economic Adjustment Committee (EAC). The EAC, chaired by the Secretary of Defense and composed of 18 executive agencies, is responsible for helping communities that are affected by changes in major defense programs. The EAC uses a combination of federal, state, and local resources to meet the needs of impacted communities. The OEA is the permanent staff of the EAC.

For M-X, a cooperative intergovernmental impact planning process was begun in early 1980. In fiscal year (FY) 1980 Congress appropriated $1 million for M-X community impact planning for the states of Nevada and Utah. Congress appropriated an additional $5 million in FY 1981 to continue this planning. The Air Force has requested $10 million for community-based impact planning in FY 1982.

The most critical components in the impact planning assistance program are the M-X Intergovernmental Working Groups (IWG). The Nevada and Utah IWGs were established by the governors to bring together the main participants in the planning process. Representatives on these working groups are local (from municipalities and counties), state (from the M-X coordinator's offices and other state agencies), and federal (from the OEA, Air Force, and the Army Corps of Engineers as the Air Force's construction agent). These representatives meet monthly to coordinate impact planning activities currently underway and to review and forward funding requests to the Air Force for additional planning efforts. These funding requests are made in accordance with an annually approved comprehensive work program. The comprehensive work programs are congressionally mandated and constitute the avenue through which community impact planning fur. s are available.

The Congress is currently considering proposed legislation to provide new authority to the Secretary of Defense which would authorize him to conduct a special impact assistance program to meet community needs arising from the deployment of M-X. The heart of the proposed assistance program would be the community-based impact planning process already begun as described above. It would be through this planning process that the special impact assistance funds would be made available.

In summary, a community impact assistance program based on state and local planning is underway. Six million dollars have been appropriated to date and $10 million have been requested for FY 82. The final form the impact assistance will take depends on congressional action. In any event, the community impact assistance program, its amount, scope, and substance, will depend on the requests generated from the community-based impact planning process. The Air Force and Department of Defense are committed to minimizing adverse environmental effects through mitigation planning. Additional information on mitigations is included in Chapters 2 and 4 and centrally located in ETR-38.

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